

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner

v.

VOIP-PAL.COM, INC.,
(Alleged) Patent Owner

U.S. PATENT NO. 8,630,234

Case IPR2022-01232

**DECLARATION OF DR. VIJAY MADISETTI IN SUPPORT OF PETITION
FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §312 AND 37 C.F.R. §42.104**

META 1003 META
V. VOIP-PAL

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LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 8,630,234 ('234 Patent)
1002	File History of U.S. Patent No. 8,630,234
1003	Declaration of Dr. Vijay Madisetti
1004	Curriculum Vitae of Dr. Vijay Madisetti
1005	U.S. Patent No. 7,668,159 ("Buckley")
1006	U.S. Patent No. 7,995,565
1007	U.S. Patent No. 6,954,654
1008	U.S. Patent App. Pub. No. 2009/0047922
1009	U.S. Patent No. 8,731,163 ("Bates")
1010	IETF RFC 3261, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc3261
1011	U.S. Patent No. 7,245,609
1012	Claim Construction Order (Dkt. No. 67) in Case No. 6:21-cv-00668-ADA (W.D. Tex.)
1013	Joint Claim Construction Statement (Dkt. No. 59) in Case No. 3:22-CV-03202-JSC (N.D. Cal)
1014	U.S. Patent Pub. No. 2008/0167039
1015	U.S. Patent Pub. No. 2002/0102973
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1017	Exhibit 2016 in <i>Apple, Inc. v. VoIP-Pal.com, Inc.</i> , IPR 2016-01201 (P.T.A.B. Feb. 10, 2017)
1018	Email with attachment from Counsel for Patent Owner Regarding Claim Construction, dated March 2, 2022
1019	"Convergence Technologies for 3G Networks IP, UMTS, EGPRS and ATM", by Jeffery Bannister et al., Wiley, England (2004)

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Exhibit No.	Description
1020	IETF RFC 3986, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc3986
1021	IETF RFC 2543, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc2543
1022	U.S. Patent No. 7,283,507
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1024	Excerpts from Wireless Encyclopedia, Althos Publishing (2007)
1025	International Patent Publication No. WO 01/89145 A2
1026	Excerpt from the File History of U.S. Patent No. 10,880,721 – “Roaming – Wikipedia” (submitted along with IDS on September 24, 2013)

I. INTRODUCTION

1. I have been retained by Meta Platforms, Inc. (“Meta” or “Petitioner”) to provide my opinion regarding whether claims 30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75 (“Challenged Claims”) of U.S. Patent No. 8,630,234 (EX1001, the “’234 Patent”) would have been obvious to one of ordinary skill in the art, as part of the above-captioned petition of *inter partes* review (IPR) of the ’234 Patent.
2. I am being compensated for my time at my standard hourly consulting rate of \$600 per hour. My compensation does not depend on the outcome of this litigation or the opinions I form.
3. In forming my opinions expressed in this declaration, I have relied on my extensive knowledge, training, and experience, as well as all of the materials cited herein. I have also reviewed the claim construction briefing previously filed in case no. 5:22-cv-03202 (N.D. Cal.).

II. QUALIFICATIONS

4. My qualifications and publications can be found in my Curriculum Vitae, which is Exhibit 1004, along with a listing of the cases in which I have testified as an expert at trial or by deposition within the preceding five years. My background and experience qualify me to offer the opinions offered in this Declaration and are described below.

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5. In 1984, I received my Bachelor of Technology (Honors) in Electronics and Electrical Communication Engineering at the Indian Institute of Technology (IIT) in Kharagpur, India. In 1989, I obtained my Ph.D. in Electrical Engineering and Computer Science at the University of California, Berkeley. That year, I also received the Demetri Angelakos Outstanding Graduate Student Award from the University of California, Berkeley, and the IEEE/ACM¹ Ira M. Kay Memorial Paper Prize. I authored several papers and proposals during this time, including “Multilevel Range/NEXT Performance in Digital Subscriber Loops”, IEEE Proceedings on Communications, Speech and Vision, Vol 136, Issue 2, April 1989, and “Comparison of Line Codes and Proposal for Modified Duobinary”, Contribution T1D1.3-85- 237, American National Standards Institute, November 1985.
6. In 1989, I joined the faculty at Georgia Tech. My first position was an assistant professor position. I became an associate professor in 1995. In 1997, I was awarded the VHSIC Hardware Description Language (or VHDL) International Best Ph.D. Dissertation Advisor for my contributions in the area of rapid prototyping. I became a full professor in 1998 and have maintained

¹ IEEE is the Institute of Electrical and Electronics Engineers. ACM is the Association for Computing Machinery.

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that title ever since. As a faculty member at Georgia Tech, I have been an active contributor in several disciplines, including wireless networks, cellular communications, computer engineering, embedded systems, chip design, software systems, and image and video processing.

7. From 1999-2003, I consulted with a team of engineers to design an integrated Soft Switch & Media Server, the SNX 850/8500, that was being sold and installed in Asia. The SNX 8500 was a one-box solution to VOIP, LAN switching, and iPBX/PBX solutions for enterprise customers, and has been installed as part of BPL Telecom's then offerings in Asia. The PBX modules within SNX 850/8500 supported Analog Phones, Digital Feature Phones, E1/ISDN PRI Trunks, E1 or PRI at the PSTN gateway, VOIP (SIP) soft phones, SS7 interfaces, and operated via a browser-based console. It included a variety of features, such as Automatic Call Back, Busy Override, Do Not Disturb, etc., through support for 16 ISDN BRI circuits.
8. Since 1995, I have authored, co-authored, or edited several books in the areas of communications, signal processing, chip design, and software engineering, including VLSI Digital Signal Processors (1st ed. 1995), Quick-Turnaround ASIC Design in VHDL (1st ed. 1996), The Digital Signal Processing Handbook (2d. ed. 2010), Cloud Computing: A Hands-On Approach (1st ed.

2013), Internet of Things: A Hands-On Approach (1st ed. 2014), and Big Data Science & Analytics (1st ed. 2016).

9. Between 1998 and 2004, my students and I studied different codecs and published IETF draft standards² on audio and video streaming applications over the internet including: V. Madisetti and A. Argyriou: Voice and Video over Mobile IP Networks, IETF Draft, May 20, 2002; and V. Madisetti and A. Argyriou: A Transport Layer Technology for Improving QoS of Networked Multimedia Applications, IETF Draft July 25, 2002.
10. I have served on the paper-reviewing committees for many leading conferences in my field, and I have taken on editorial roles for leading technical journals in fields pertinent to my research. For example, I served as the Editor-in-Chief of the IEEE Press/CRC Press's three-volume Digital Signal Processing Handbook for Edition 1 (1998) and Edition 2 (2010). I have also authored over 100 articles, reports, and other publications pertaining to electrical engineering, and in the areas of communications, communications signal processing, and computer engineering.
11. Throughout my time at Georgia Tech, I have designed several specialized computer and communication systems for tasks such as wireless, audio, video,

² IETF is the Internet Engineering Task Force.

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and protocol processing for portable platforms (like cell phones and PDAs). I have also been actively involved in the areas of wireless communication, software engineering, system design methodologies, and software systems.

12. Beyond my work in academia, I have worked in industries relating to speech, audio, and image processing since the early 1980s. I developed efficient algorithms for echo cancellers for speech and voice applications that reduce complexity and improve performance. This work resulted in a peer-reviewed publication called “Dynamically Reduced Complexity Implementation of Echo Cancellers,” IEEE ICASSP 96, Tokyo.
13. From 2000-2001, I designed three Global System for Mobiles multiband mobile phones for a leading telecom equipment manufacturer in Asia.
14. From 2000-2007, I designed and provided optimized mobile speech to one of the leading mobile phone and base station manufacturers in the world. This implementation has been deployed on millions of 3G/4G mobile phones and numerous base stations.
15. During that same time frame, I also designed and provided several VOIP codecs to leading VOIP phone vendors that are now deployed in several generations of enterprise VOIP phone products in the USA and abroad. I designed and provided echo cancellers for VOIP applications.

16. From 2002-2007, I developed wireless baseband and protocol stack software and assembly code for a leading telecommunications handset vendor. The software and code focused on efficient realization of speech codecs and echo-cancellation and optimization of 3G software stack. My work included creating software code and analyzing and revising existing software code.
17. I have also developed speech and video codecs that comply with 3GPP standards.³ I developed software to implement the associated 3GPP standards and developed tests to verify compliance with these standards. I have also developed several speech and VOIP (voice over Internet Protocol) codecs that conform with the ITU (International Telecommunications Union) standards G.723.1, G.729 and Echo Cancellers conforming with the ITU G.168 standards.
18. The software and code I have developed and tested based on the ITU standards are now used by one of the leading suppliers of VOIP/Internet telephones in the world. This software is also part of commercially released soft switches for internet telephony used extensively in Asia.

³ 3GPP stands for 3rd Generation Partnership Project, a collection of standards organizations that develop protocols for mobile telecommunications.

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19. In addition to my academic and industrial pursuits, I am also a long-standing member of several professional technical organizations. I was the Technical Program Chair for both the IEEE MASCOTS in 1994 and the IEEE Workshop on Parallel and Distributed Simulation in 1990. More recently, I was elected to the Fellowship of the IEEE because of my contributions to embedded computing systems. Fellows are in the highest tier of membership in the IEEE, a world professional body consisting of over 300,000 electrical and electronics engineers. Only 0.1% of the IEEE membership is elected to the Fellowship each year.
20. I also serve as the official representative from Georgia Tech to the 3GPP/ETSI4 standards organization. As such, I am familiar with the standard processors for speech, audio and video applications in the context of mobile and wireless communications.
21. Through the past twenty years, I have been retained to test various commercial mobile and wireless products to determine if they comply with various technical standards. I have participated in and contributed to activities of Standards Setting Organizations (“SSOs”) such as the IEEE, IETF, ETSI, and

⁴ ETSI stands for European Telecommunications Standards Institute.

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others, as part of my work as a teacher and researcher in advanced telecom, wireless, and computer technologies.

22. Over the past three decades, I have studied and designed wireless networking and image and video processing circuits for numerous applications, including digital and video cameras, mobile phones, and networking products for leading commercial firms.

III. UNDERSTANDING OF PATENT LAW

23. I am not an attorney, but I have been provided with an understanding of certain legal principles relevant to my analysis and opinions in this matter.
24. I understand that a person of ordinary skill in the art (a “POSITA”) is a hypothetical person who is presumed to have known the relevant art at the time of the invention, and that the factors that may be considered in determining the level of ordinary skill in the art may include: (a) type of problems encountered in the art; (b) prior art solutions to those problems; (c) rapidity with which innovations are made; (d) sophistication of the technology; and (e) educational level of active workers in the field. In a given case, every factor may not be present, and one or more factors may predominate.
25. I have been informed that patent claims are construed or interpreted from the perspective of a POSITA at the time of the claimed invention. I understand

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that the most important evidence to consider in construing the claims is the “intrinsic” evidence. This includes the claim language, the patent’s specification, and the prosecution history (including references cited in the prosecution history). I understand that the POSITA must read the claim terms in the context of the claim and in the context of the entire patent specification. I understand that the patentee may explicitly define a claim term in a way that differs from the plain and ordinary meaning in the art.

26. I further understand that a POSITA may also consider “extrinsic” evidence when interpreting the meaning of claim terms, which are documents and testimony beyond the patent to ensure that a claim is construed consistently with the understanding of those of skill in the art at the time of the claimed invention. I also understand that extrinsic evidence may not be relied on if it deviates from the meaning of the claim provided by the intrinsic evidence.
27. I further understand that inventors may draft their claims as a means or step for performing a specified function, but that they must also disclose in the specification the structure that performs the function, or that claim is indefinite. I also understand that construing a means-plus-function claim requires identifying the claimed function and determining what structure, if any, disclosed in the specification corresponds to the claimed function. I further understand that a term with a computer-implemented function must

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have a clearly linked structure in the form of an algorithm. I understand that if I cannot identify such an algorithm, the term lacks a clearly linked structure and is therefore indefinite. I further understand that a general purpose computer cannot be the structure for a computer-implemented function because this amounts to purely functional claiming.

28. I understand that a claim is invalid if it is anticipated or obvious. Anticipation of a claim requires that every element of a claim be disclosed expressly or inherently in a single prior art reference, arranged in the prior art reference as arranged in the claim.
29. It is my understanding that a patent claim is invalid for obviousness if the claimed invention would have been obvious at the time the invention was made to a person having ordinary skill in the art (POSITA).
30. I understand that the following factors are considered in an obviousness analysis: (1) the scope and content of the prior art; (2) the differences between the art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention of the asserted patent was made; and (4) objective evidence of nonobviousness. In order to determine whether claim elements are found in the prior art, it is necessary to compare the properly construed claim language of the patent with the teachings of the prior art.

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31. I understand that certain factors—often called “secondary considerations” may support or rebut an assertion of obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the alleged invention, skepticism of those having ordinary skill in the art at the time of the alleged invention, unexpected results of the alleged invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I further understand that there must be a nexus—*i.e.*, a connection—between any such secondary considerations and the alleged.
32. I further understand that a claim can be found obvious if it unites old elements with no change to their respective functions, or alters prior art by mere substitution of one element for another known in the field, with that combination yielding predictable results. While it may be helpful to identify a reason for this combination, common sense should guide, and there is no rigid requirement for a teaching, suggestion, or motivation to combine. For example, design incentives and other market forces can prompt variations of a product, either in the same field or different one. If a person having ordinary skill in the relevant art can implement a predictable variation, obviousness can

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bar patentability. Similarly, if a technique has been used to improve one device, and a person having ordinary skill in the art would recognize that the technique would improve similar devices in the same way, use of the technique is obvious. I further understand that a claim may be obvious if common sense directs one to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

33. I also understand that any one or more of the following rationales may support a finding of obviousness:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- User of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- "Obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

34. I also understand that it is impermissible to use the claimed invention itself as a blueprint for piecing together elements in the art. In other words, it is impermissible to use hindsight reconstruction to pick and choose among disclosures in the prior art to reconstruct the claimed invention.

IV. OVERVIEW OF OPINION

35. I cite many documents in this declaration in support of my analysis, but my opinion regarding the obviousness of the Challenged Claims is fundamentally based on two references:

- **U.S. Patent No. 7,668,159 (“Buckley”) (EX1005)**, filed on August 3, 2007 and granted on February 23, 2010. I understand that, based on Buckley’s filing date, it is prior art to the ’234 Patent.
- **U.S. Patent No. 8,731,163 (“Bates”) (EX1009)**, filed on May 9, 2007 and granted on May 20, 2014. I understand that, based on Bates’s filing date, it is prior art to the ’234 Patent.
- **U.S. Patent No. 6,954,654 (“Ejzak”) (EX1007)**, filed on July 31, 2001 and granted on October 11, 2005. I understand that, based on Ejzak’s publication data, it is prior-art under to the ’234 Patent.

36. In my opinion, in view of these prior art references, the following sets of claims would have been obvious to a POSITA before February 4, 2008, as summarized in the following table:

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Ground	Claims	Proposed Statutory Rejection
I	30-33, 35, 38-40, 43, 45-48, 51, 54, 61-62, 64-65, 67, 70, 72, and 75	Obvious under §103 over Buckley
II	38-39, 54, and 70	Obvious under §103 over Buckley in view of Ejzak
III	30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75	Obvious under §103 over Buckley in view Bates
IV	38-39, 54, and 70	Obvious under §103 over Buckley in view Bates and further in view of Ejzak

37. As noted above in the Introduction section, for the present assignment, I was only asked to analyze the obviousness of the Challenged Claims, and the scope of my analysis in this declaration is limited to those Challenged Claims. Accordingly, I do not address herein any other claims in the '234 Patent. No inferences should be drawn from the limited scope of my analysis in this declaration. I have been asked to consider certain other claims in the '234 Patent, and claims in another related patent, and my opinions with respect to those claims are addressed in separate declarations.

V. THE '234 PATENT

A. Priority Date

38. The '234 Patent issued on January 14, 2014, from U.S. Application No. 13/056,277, filed on January 27, 2011. It claims priority to Provisional Application No. 61/129,898, filed on July 28, 2008.
39. Although the earliest claimed priority date on the face of the '234 Patent is July 28, 2008, I understand that Patent Owner has contended that “the earliest corroborated date of invention for the '234 [P]atent is February 4, 2008.” I have performed my analysis herein assuming that the priority date of the patent is February 4, 2008, although I have not seen any evidence suggesting the the invention was in fact conceived at that earlier date, and my opinions herein would not change if the priority date were actually July 28, 2008 (*i.e.*, the earliest priority date appearing on the face of the patent).

B. Technology Overview

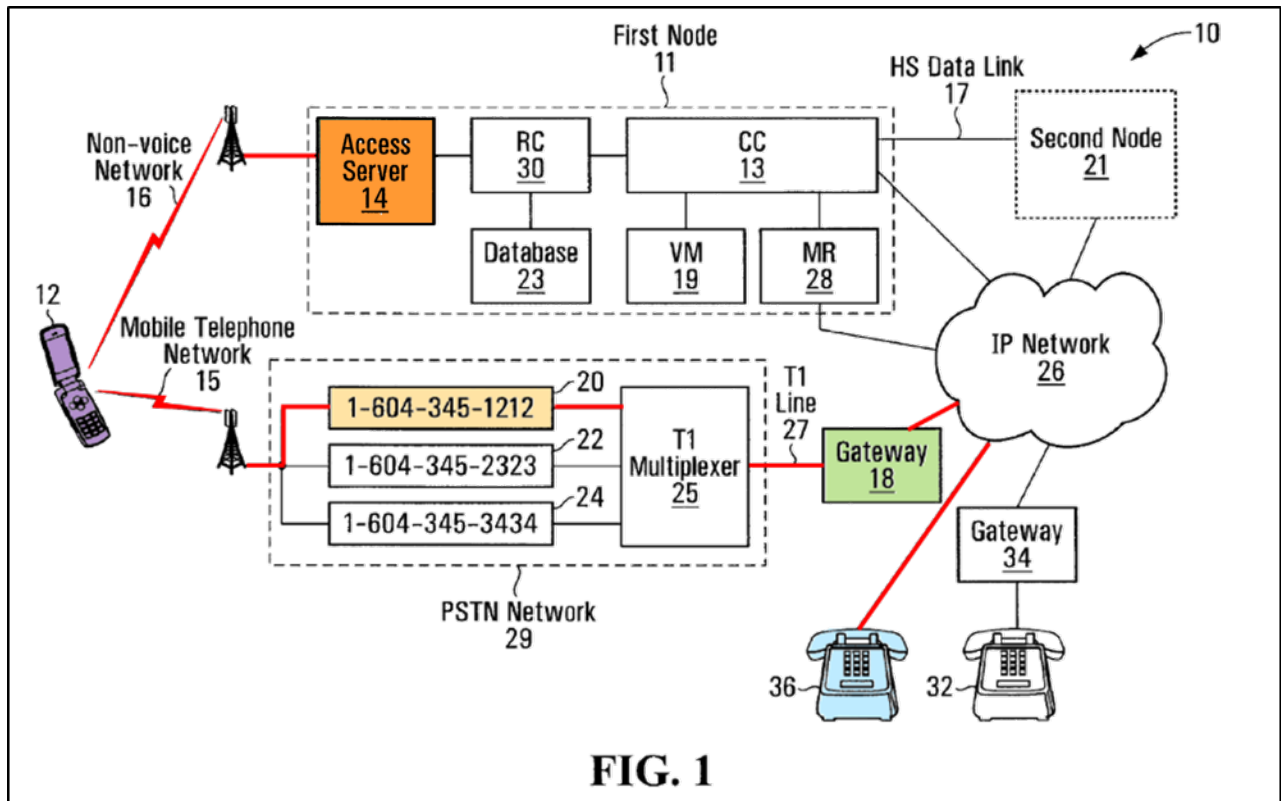
40. Traditional Public Switched Telephone Networks (PSTNs) route telephone calls over circuit-switched telephone networks, which are also called “voice” networks. *See* EX1007, 1:19-22. The '234 Patent uses a sequence of messages sent over a “non-voice” network (such as a packet-switched Internet Protocol (IP) network) to route voice calls over an IP network (aka Voice-over-IP or VoIP). EX1001, 8:33-39, 9:6-13. As background, “circuit-switched” networks involve a particular, dedicated circuit connection to transmit data (in

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the form of electrical signals) between the caller and callee. “Packet-switched” networks such as the Internet, on the other hand, break data into small packets that are separately routed over network connections to the recipient, which reassembles the packets once they are received.

41. The '234 Patent's call routing process begins when a mobile telephone (purple⁵ element 12 in Figure 1 below) sends an “access code request message” to an access server (orange element 14) belonging to a telecommunications service provider (such as AT&T). EX1001, 11:44-48. The access code request message includes the intended callee's identifier, such as a telephone number, and the caller's “location identifier.” *Id.* 11:59-62, 12:13-15. Based on that information in the access code request message, the access server responds with an “access code” in an “access code reply message.” *Id.* 12:55-59. The “access code” is a temporary number, such as a local telephone number, used to route the call. *Id.* 12:63-66.

⁵ All emphasis and color is added, unless indicated otherwise.

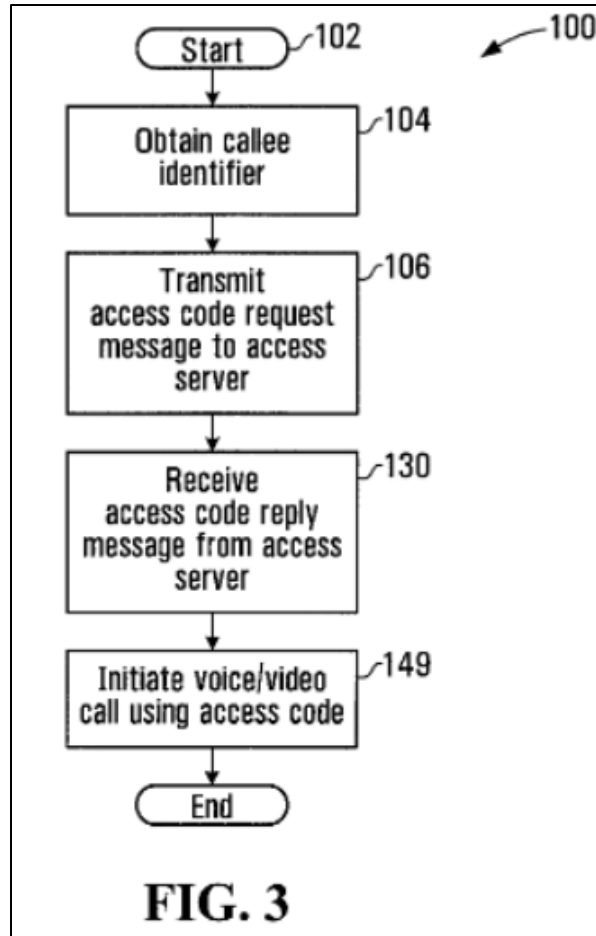


42. In Figure 1, the “access code” is the temporary telephone number in yellow-highlighted element 20 (*i.e.*, 1-604-345-1212). This temporary number is used to route the call within the phone’s home network towards a gateway (green element 18). The gateway bridges the PSTN (element 29) to an IP Network (element 26), so that calls originating or terminating on the PSTN (element 29) can be routed over IP network (element 26) to a callee’s IP phone (blue element 36). *Id.* 13:40-47. As was well-known in the art, IP networks such as the Internet do not apply long-distance or roaming charges, so routing a call over such networks in the manner described above avoids such charges. *See, e.g.*, EX1011 (prior art), 1:7-19 (“By moving voice traffic to IP networks,

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companies may reduce or eliminate certain toll charges associated with transporting calls over [PSTN]”).

43. The access server (element 14) may receive the access code request message “over a non-voice network, such as an internet using WiFi or GPRS technology for example” EX1001, 11:51-52. The mobile telephone’s location identifier (which is included in the access code request message) may be “an IP address of the mobile telephone [] in a wireless IP network, such as the non-voice network...” *Id.* 12:19-22. The server’s access code reply message, which includes the temporary number (access code), may be returned over the non-voice, IP network (element 16). The mobile telephone may then use the access code to initiate a call on the voice network (element 15) that is then routed over the IP Network (element 26).
44. The purported invention is summarized in Figure 3, which depicts the process from the telephone’s perspective as found, for example, in claim 1:



C. Person of Ordinary Skill in the Art

45. In my opinion, a POSITA at the time of the alleged invention described in the Asserted Patent would have had a Bachelor's degree in Computer Science or Electrical Engineering, or an equivalent field, and approximately two years of experience working with networks. Additional education might compensate for less experience, and vice-versa.
46. This level of ordinary skill experience largely aligns with the level of ordinary skill that VoIP-Pal's expert set forth in his declaration in an *inter partes* review of U.S. Patent No. 8,542,815. See EX1017 ¶ 14 (“[I]t is my opinion

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that one of ordinary skill in the art as of the priority date would be someone with an undergraduate degree in either Computer Science, Computer Engineering, Electrical Engineering, or a closely related discipline. Furthermore, I believe that such a person would also have 2 years of experience in system-level software development. In my opinion a greater degree of professional experience could serve to replace some degree of formal education. I also believe that some greater degree of formal education could serve to replace some degree of professional work experience.”). The ’234 Patent and the ’815 Patent were both originally assigned to Digifonica (International) Limited (as indicated on the face of the patents), share an overlapping named inventor in Johan Emil Viktor Bjorsell, and are in the same field. *Compare* EX1001, 1:10-19 (“1. Field of Invention. This invention relates generally to telecommunication, and more particularly to methods, systems, apparatuses, and computer readable media for initiating or enabling a call with a mobile telephone to a callee. 2. Description of Related Art. Mobile telephone service providers often charge significant fees for long distance telephone calls, particularly when the mobile telephone is roaming in another mobile telephone service provider’s network.”), *with* EX1016, 1:11-13 (“1. Field of Invention. This invention relates to voice over IP communications and methods and apparatus for routing and billing.”).

47. Based on my education and experience, I am familiar with the level of knowledge that one of ordinary skill would have possessed during the relevant period of time. By the of the earliest possible priority date (February 4, 2008), I was at least a person of ordinary skill in the art, and I am familiar with how persons of ordinary skill in the art would have interpreted the '234 Patent.

VI. CLAIM CONSTRUCTION

A. Agreed Constructions

48. I understand that, in the parallel litigation between the parties, the parties have agreed to the following constructions for certain terms governed by 35 U.S.C. § 112 ¶ 6. I have applied these constructions in my analysis.

Claim Term	Agreed Construction
“means for receiving from the mobile telephone an access code request message” (claim 46)	<u>Function</u> : receiving from the mobile telephone an access code request message <u>Structure</u> : a network interface
“means for transmitting an access code reply message including said access code to the mobile telephone” (claim 46)	<u>Function</u> : transmitting an access code reply message including said access code to the mobile telephone <u>Structure</u> : a network interface

B. “means for producing an access code ... wherein said means for producing said access code comprises means for selecting said access code from a pool of access codes” (Claim 46)

49. In my opinion, this term has a function of “producing an access code by selecting said access code from a pool of access codes” and a structure of “a processor (of the routing controller), a memory storing table memory in a form given in FIG. 10, a temporary memory containing a local calling area identifier and an access code store, and a clock for selecting an access code from a pool of access codes using the algorithm given in FIG. 12.”
50. The '234 Patent's system includes a “routing controller,” illustrated in Figure 8, which selects the access code. EX1001, 14:30-38, 14:48-54, 16:7-11, 20:23-27. The routing controller generates the access code using the algorithm described in the flow chart of Figure 12, which the patent describes as illustrating “a process for producing an access code.” *Id.*, 20:39-40. The patent specification associates the recited “pool of access codes” with the access code association table that is element 170 in Figure 10. *Id.*, 17:33-36, 20:46-59. The routing controller further links the process of selecting an access code from the access code pool with the algorithm 270 shown in Figure 12 and described in accompanying text. *Id.*, 20:39-59, 22:37-45.
51. The algorithm illustrated in Figure 12 describes how the microprocessor of the routing controller is adapted to select an access code. EX1001, 20:46-55,

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21:10-12, 21:27-29, 21:65-66, 22:4-5, 22:11-13, 22:18-19. Using this algorithm, the microprocessor searches through the access code association table of Figure 10, compares the data in the various table entries to the area code stored in the local calling area identifier value in the routing controller's memory (item 245 in Figure 8), and identifies the current value of the clock (item 244). EX1001, 20:39-55, 21:29-53. When the algorithm selects an access code from the pool, the algorithm writes it to an access code store in the routing controller's memory (item 250). EX1001, 21:44-63.

52. I understand that a court in W.D. Tex. essentially adopted Patent Owner's previously proposed construction, which differs in that it incorporates the structure of "Access server 14 and/or a routing controller 30 having a microprocessor (152 or 232) programmed to implement the algorithm illustrated in FIG. 7 including step 196 and/or FIG. 12. A memory stores the pool of access codes that is selected from. Various embodiments of a routing controller selecting an access code from the pool of access codes are disclosed at col. 15, line 7 to col. 22 line 60. In some embodiments, the routing controller is part of or integrated with the access server as described in col. 17 lines 19-30." EX1012, 3.

53. My opinion that the Challenged Claims are obvious over the grounds asserted herein applies regardless of which of these constructions is adopted, and I have applied both of them in my analysis.

C. Other Terms

54. No other claim terms require construction for purposes of resolving the issues raised in this Petition. The fact that I do not propose additional constructions for purposes of my analysis herein does not, however, imply that I agree that any other term should be construed according to some unspecified “plain and ordinary” meaning; rather, it means only that no other claim term requires construction for purposes of evaluating the invalidity of the challenged claims in view of the prior art asserted herein.

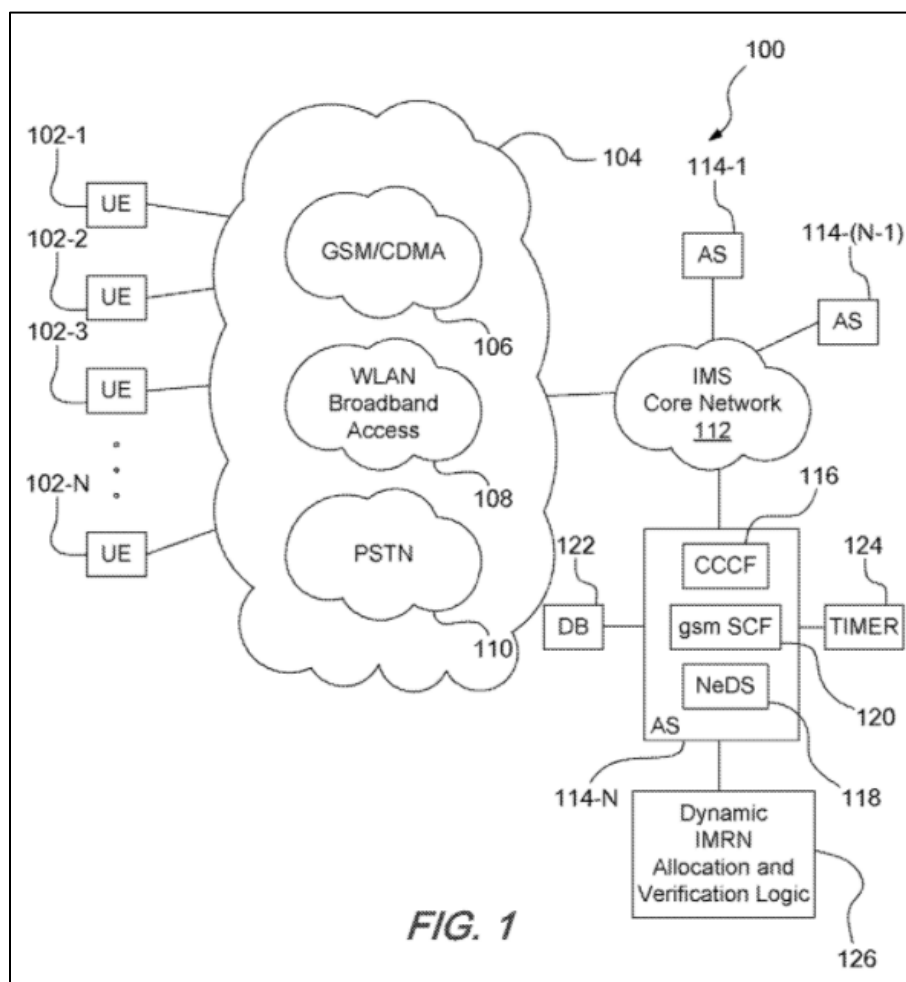
VII. OVERVIEW OF THE PRIOR ART

A. Buckley

55. Buckley teaches routing PSTN calls over packet-switched networks. *See* EX1005, Abstract. Figure 1 in Buckley (below) depicts example components that may be involved, including: mobile phones (*i.e.* User Equipment (UE) (element 102)); Circuit-Switched (CS) networks (*e.g.* PSTN (element 110)); and Packet-Switched (PS) networks (*e.g.* wireless Local Area Network (WLAN) Broadband Access (element 108) and Internet protocol Multimedia Subsystem (IMS) Core Network (element 112)). *Id.*, 3:19-65. As explained below, Buckley teaches Application Servers (AS) (elements 114-1 to 114-N)

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and associated network entities that perform access code messaging,
temporary access code selection, and call routing in the same way as the '234
Patent's access server. *Id.*, 3:65-4:62.



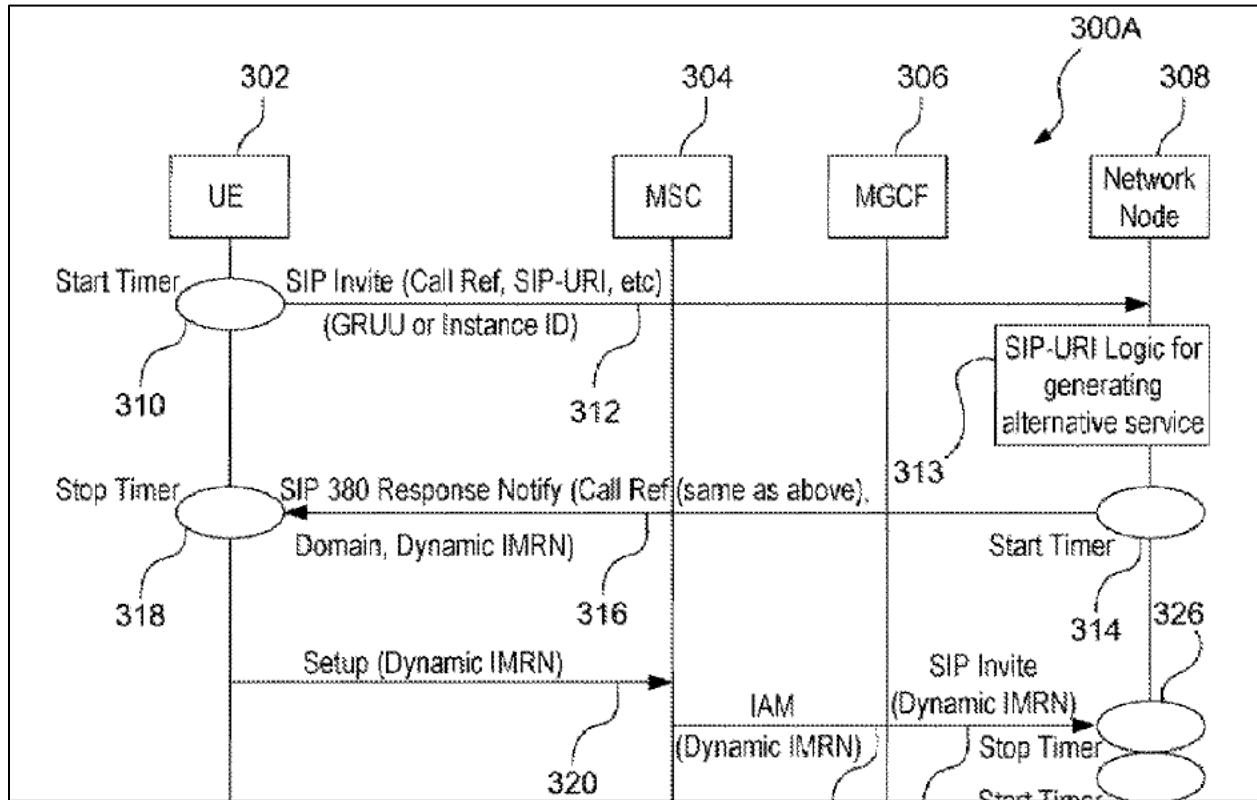
PSTN, GSM/CDMA, and WLAN Broadband are technologies that allow the
UE to access the network. The Public Switched Telephone Network (PSTN)
is the technology behind telephony systems based on Circuit-Switched
networks. GSM/CDMA are 2nd generation cellular technology that allows UE

access to the network. WLAN Broadband is another access technology. *See* EX1019, 11.

56. The analog telephone was invented around 150 years ago and switched to digital telephony systems around 50 years ago. The Internet and TCP/IP protocols enabled carrying voice and more advanced services over IP. Session Initiation Protocol (SIP) is the IETF's RFC 2543 (EX1021), which defines establishing VoIP connections. SIP defines a control protocol for creating, modifying, and terminating sessions with one or more users. Buckley's AS uses this well-known Session Initiation Protocol (SIP)⁶ messaging (access code request and reply messages) to assign a temporary IP Multimedia Routing Number (IMRN) (access code) that allows CS-originated calls to be routed over IMS (IP) networks. *Id.* For example, Figure 3A (excerpted below) depicts this process at a high level, which begins when the calling mobile phone (UE, element 302) sends a SIP Invite message (element 312) to the home AS (network node 308). *Id.*, 6:55-63. The AS selects a temporary IMRN from a pool and sends it back to the mobile telephone (UE) in a SIP Response message (element 316). *Id.*, 4:31-40, 7:29-42. The UE then uses the IMRN to initiate a call (element 320) that an AS routes to the callee. *Id.*,

⁶ The '234 Patent also uses SIP messaging. EX1001, *e.g.*, 23:4-58, Fig. 14.

4:15-40, 7:47-64. The SIP messaging includes caller and callee Uniform Resource Indicators (URI) that identify location. *Id.*, 2:62-3:12, 5:18-58, Figures 3A, 3B.



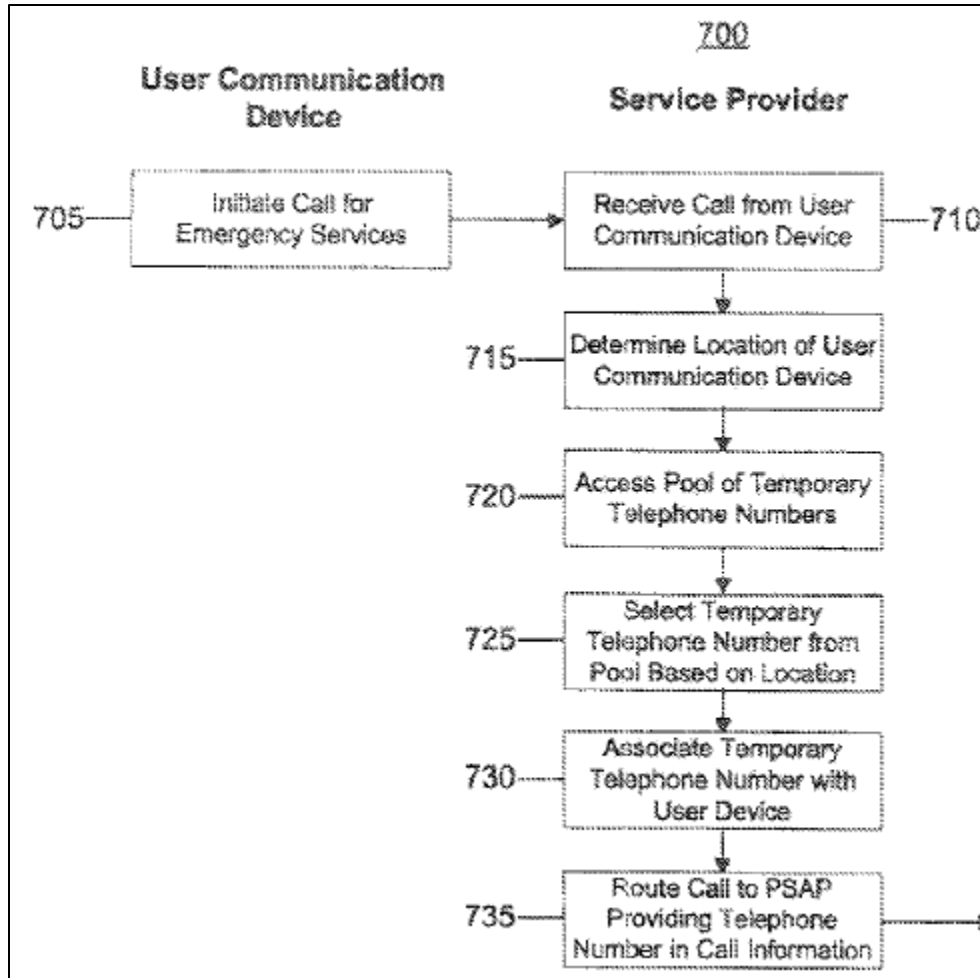
B. Bates

57. Bates teaches a highly similar process of selecting a temporary number for a call. *See* EX1009, Abstract. The temporary number can be used to improve emergency call routing, among other things. *See id.*, 12:25-31. Bates teaches that routing the call to the appropriate Public Safety Answering Point (PSAP) may require a “circuit-switched voice network, [or] a packet-switched data network,” where “circuit-switched voice networks may include the PSTN, and

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packet-switched data networks may include networks based on the Internet protocol (IP).” *Id.* 6:32-38. Bates teaches how to improve such call routing decisions by selecting a temporary number for the call from a pool of temporary numbers, where the selection is based on the geographic location of a call participant. EX1009, Abstract, 12:25-31, Fig. 7.

58. In Figure 7 of Bates (excerpted below), a mobile telephone initiates a call by sending an access code request message to a Service Provider’s node. Based on the mobile telephone’s location, a temporary number is selected from a pool of numbers that enable a local call to be made and routed.



C. Ejzak

59. Ejzak teaches techniques for use in a communication system having many of the same network entities and associated functionalities taught in Buckley. Compare EX1005, Figure 3A, with EX1007 Figure 1 (element 141) and Figure 3 (both including, e.g., IP Multimedia Subsystem (IMS), Mobile Switching Center (MSC), Mobile Gateway Control Functions (MGCF), Interrogating Call State Control Function (I-CSCF), and Serving Call State Control Functions (S-CSCF)). Like Buckley and Bates, Ejzak teaches PSTN

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and VoIP call interoperability such that calls can traverse packet-switched networks (like an IP network) and circuit-switched networks (like a PSTN). *See* EX1007, 2:36-40. Ejzak further teaches functionality to use access codes, such as E.164 numbers, to identify IP addresses that are used to route calls over IP networks. *Id.*, 8:43-48. It also teaches services to establish emergency service calls, and services that use a mobile phone's location to route call traffic over the least-cost⁷ path. *Id.*, 7:28-36, 4:52-60.

60. Ejzak further teaches using SIP messaging within this architecture. *Id.*, 8:58-66. For example, during Ejzak's call messaging and routing process, a callee identifier (such as an E.164 telephone number) is received in a SIP Invite

⁷ Similar to Ejzak, the '234 Patent uses the term "lowest cost channel" to refer to routes optimized based on a location identifier. EX1001, 12:44-54 ("[T]he location identifier in the location identifier field 119 may be used to determine a local calling area associated with the mobile telephone 12, within which local calling area channels (illustrated as 20, 22, and 24 in FIG. 1) are available to the mobile telephone 12 for the lowest cost to the user. However, it will be appreciated that the location identifier may only approximately identify a local calling area, and may not necessarily identify the lowest cost channel (illustrated as 20, 22, and 24 in FIG. 1) for the mobile telephone 12.").

message, and Ejzak's network entities are able to select from, and analyze, sets of attributes associated with that callee identifier. *Id.* Ejzak's servers determine from those attributes whether the callee identifier is associated with a device that can receive calls routed over packet-switched networks (*e.g.*, IMS or IP) or circuit-switched networks (*e.g.*, PSTN). *Id.*

61. Ejzak teaches querying a Domain Name System (DNS) using the callee identifier (E.164 number). *Id.* Ejzak's DNS "provides a standardized database and a standardized protocol to store and retrieve information about domain names from the database." *Id.*, 8:30-36. As such, "[q]ueries are sent to DNS [], which responds with the associated resource records [*e.g.*, IP addresses] for the requested input." *Id.* Thus, the DNS replies with the appropriate IP address, from a set of available IP addresses, to enable communications over an IP network or to route the call to a PSTN gateway for communication over a PSTN. *See id.*, 8:63-9:6. Notably, even if the callee identifier is associated with a PSTN, the DNS can respond with attributes for SIP service for that callee, which would include an IP address that enables establishing communications through an IP network. *See id.* 9:8-12.
62. Ejzak's DNS further includes "the functionality of an ENUM [E.164 Number Mapping] server," which maps PSTN numbers to IP addresses, and vice-versa, thus rendering them interchangeable for the purpose of identifying IP

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- network communication channels for communication between a caller and callee, including using SIP messaging (as in Buckley). EX1007, 8:29-36, 8:43-48 (“If a telephone number in DNS 165 contains SIP service attributes, the result of an ENUM translation [*i.e.*, mapping the queried E.164 telephone number to an IP address] from DNS 165 is a domain name of the SIP server for the user with that telephone number. A subsequent query to DNS 165 with that domain name determines the IP address of the SIP server.”). The DNS server thus maps telephone numbers to a set of attributes, any of which can be selected and “used to contact a resource associated with that telephone.” 8:36-43. And, the DNS/ENUM functionality allows network entities to map any E.164 number to an IP address that may be used to route a call to that E.164 number over an IP network.
63. Ejzak also teaches using a network entity called a “BGCF” for “call/session control.” EX1007, 4:25-29. The BGCF selects the optimal gateway to route a call by determining “which network should be used to provide inter-working with PSTN,” a determination that the BGCF can make by analyzing “the current location of the calling UE, [and] the location of the PSTN address,” with “the desire to minimize path distance within the PSTN network, and a desire for the least-cost path.” *Id.*, 4:46-60.

VIII. SPECIFIC GROUNDS OF OBVIOUSNESS

A. Claims 30-33, 35, 38-40, 43, 45-48, 51, 54, 61-62, 64-65, 67, 70, 72, and 75 Are Obvious Over Buckley.⁸

1. Claim 30

a. Element 30[preamble]: “A method for enabling mobile telephone roaming, the method comprising”

64. In my opinion, Buckley teaches a method for enabling mobile telephone roaming.

⁸ A POSITA would have understood that all of the disclosures relied upon in my analysis are part of a single embodiment as disclosed by Buckley, albeit a particular mode or implementation of that embodiment. For example, although Buckley states that “[i]n some embodiments, the IMRN may be mapped to all the received SIP call information” (EX1005, 6:1-3), a POSITA would have understood that the same structure and processes are used even where the IMRN is mapped to fewer than “all” the received SIP call information; thus, whether the IMRN is mapped to “all” or less than “all” the received call information represents merely specific implementations of the same overarching embodiment (notwithstanding Buckley’s imprecise use of the term “embodiment”). In each case, my analysis relies on the embodiment of the SIP interaction between the UE and AS node taught by Buckley, as depicted at a high level in Figure 3A (for example). However, to the extent the disclosures I rely on from Buckley are not

considered to all be part of the same embodiment, a POSITA would have recognized that the disclosures are minor variations of each other, and that the disclosures are thus all compatible with each other. EX1005, 23:33-38 (“[T]he operation and construction of the embodiments of the present patent application will be apparent from the Detailed Description set forth above. While the exemplary embodiments shown and described may have been characterized as being preferred, it should be readily understood that various changes and modifications could be made therein without departing from the scope of the present disclosure....”). A POSITA would have been motivated to construct the particular embodiment of Buckley analyzed herein in order to efficiently route calls and avoid unnecessary long-distance and roaming charges, as was well-known in the art. *See, e.g.*, EX1014, Abstract (teaching “a method of providing a local access number”), [0036] (“[T]he subscriber may use the local access number to connect to a chosen long distance service provider.”); EX1001 at 1:20-28 (“One known technique for avoiding the long distance charges of mobile telephone service providers is to use a ‘calling card’. A ‘calling card’ may permit the user of the mobile telephone to place a call to a local telephone number.... The user may thus avoid the long distance charges of the mobile telephone service provider, which may be higher than the charges for using the ‘calling

65. Buckley teaches methods for UEs (User Equipment), in particular “mobile communication device[s] (e.g. cellular phones ...),” that are “untethered,” “capable of operating in multiple modes,” and “can transition from one mode of communications to another mode of communications without loss of continuity.” EX1005, 3:25-40. A POSITA would have understood that an “untethered” UE performing such transitions would commonly be roaming across different geographic locations, and that Buckley’s methods would be applied during such roaming, including because transitioning modes of communications occurs when moving from a home network to another service provider’s network, otherwise there would not likely be a need to transition modes of communication. The purpose of mobile telephones was specifically to enable telecommunications more easily while traveling, so a POSITA would have expected the mobile telephone might be roaming at least some of

card’.”). A POSITA also would have had a reasonable expectation of success in constructing the particular embodiment of Buckley analyzed herein because all of the disclosures are applied within the context of the SIP interaction between the UE and AS node as taught in Buckley’s single reference, and Buckley recognizes that any such “changes and modifications” would be “readily understood” by a POSITA. EX1005, 23:33-38.

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the time by virtue of their expected, intended use case. *See, e.g.*, EX1015 [0029] (“Cellular telephones have enabled mobile station users to roam over large geographic areas while maintaining immediate access to telephony services.”). The ’234 Patent recognizes that roaming was common and that at least some mobile telephones roamed at least some of the time. EX1001, 1:17-19 (“Mobile telephone service providers *often* charge significant fees for long distance telephone calls, *particularly* when the mobile telephone is roaming in another mobile telephone service provider’s network.”)

66. Buckley was designed for use across different “wireless technologies such as Global System for Mobile Communications (GSM) networks and Code Division Multiple Access (CDMA) networks,” and such networks were operated by a number of different service providers. EX1005, 3:41-53. As shown by the definition of “Roaming” from Wikipedia submitted during the prosecution of the ’234 Patent, the concept of roaming was actually developed in the context of those network types in order to address the issues that arose when a user was outside his or her home GSM network (for example) and in another provider’s network. *See* EX1002 at 1962 (“The term ‘roaming’ originates from the GSM (Global System for Mobile Communications) sphere; the term ‘roaming’ can also be applied to the CDMA technology. Traditional GSM Roaming is defined ... as the ability for a cellular customer

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to automatically make and receive voice calls, send and receive data, or access other services, including home data services, when travelling outside the geographical coverage area of the home network, by means of using a visited network.”). Additionally, Buckley “envisaged that the teachings hereof may be extended to *any* 3rd Generation Partnership Project (3GPP)-compliant cellular network,” and a POSITA would have understood that such networks and 3GPP standards provided for roaming by being in another mobile telephone service provider’s network and not the mobile telephone’s home network, including because 3GPP is a set of standards that different network providers agree on specifically to ensure interoperability across networks and devices. EX1005, 3:41-53. Indeed, Buckley teaches performing its methods in situations where UEs had to “register” with new networks, where the AS was “required” to provide “inter-operator” functions for UEs to communicate over different service operator networks, and where UEs would communicate with servers in the user’s “*home* IMS network.” EX1005, Fig. 2 (element 202), 2:34-47, 4:1-6, 4:22-25, 8:22-47. A POSITA would have understood that such steps occur when the UE was roaming in another mobile telephone service provider’s network and not in the mobile telephone’s home network, as recited in the preamble.

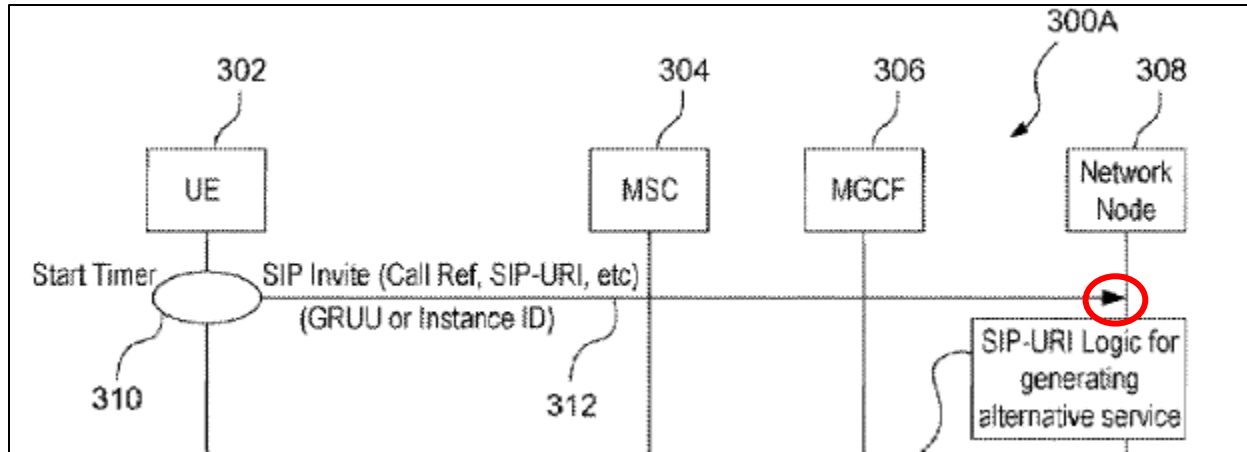
b. **Element 30[a]**

67. In my opinion, Buckley teaches this element.

- i. “receiving from the mobile telephone an access code request message including a callee identifier associated with the callee...”

68. As shown, for example, in Figure 3A (cropped in relevant part below),⁹ Buckley teaches that after a UE (mobile phone) 302 initiates a call, it transmits an SIP Invite (access code request) message 312 to a specific network node 308 called an Application Server (AS) (access server) that receives the SIP Invite message 312 (access code request message). EX1005 6:58-63 (“A Wireless UE device 302 ... is operable to generate a SIP Invite message 312 towards an application server (AS) node 308 in response to detecting that a SIP call is being initiated from UE device 302”).

⁹ References herein to Buckley Figure 3A also include the analogous portions of Figure 3B “wherein certain intermediary nodes in a home network 350 are exemplified.” EX1005, 8:22-26.



69. The SIP Invite message (access code request message) invites (*i.e.*, requests) the AS to provide an IP multimedia routing number (IMRN) (access code). The IMRN identifies, for example, a telephone number known as an E.164 number. EX1005, 4:47 (“E.164 numbers [] are operable as IMRNs”), 4:63-67 (“E. 164 is indicative of the International Telecommunications Union (ITU) telephone numbering plan....”). The IMRN telephone numbers are access codes because they provide access to call the callee. EX1001, 2:44 (“The access code may include a telephone number.”). For example, the IMRN is required for the UE to have access to a communication channel set up as a CS-network call. EX1005, 9:61-63 (“[T]he UE shall use the IMRN ... as the E.164 number to set up a CS call”). Moreover, the IMRN telephone number is a code of digits used by the mobile telephone in place of the original callee identifier (*i.e.* the URI) to connect to the AS node so that the AS node can complete the call to the callee’s original URI; indeed, that is the AS node’s

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purpose in providing the IMRN. EX1005, 6:38-40 (“[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party’s URI”). Thus, the SIP Invite message that requests such an IMRN be provided is an access code request message.

70. Buckley’s SIP Invite message (access code request message) also includes a callee identifier associated with the callee. Buckley teaches that a “called party” (callee) can be “identified with a Uniform Resource Indicator (URI)” (callee identifier, which is associated with the callee). EX1005, 1:51-53. The SIP Invite (access code request message) includes the callee’s URI (callee identifier). EX1005, 6:63-65 (“[T]he SIP Invite message 312 includes applicable call information such as [the] called party’s SIP URI....”).

ii. “... and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;”

71. The SIP Invite message (access code request message) also includes the UE’s (mobile telephone’s) location information. For example, it includes the “calling party’s SIP URI.” *Id.* 5:25-27, 47-53. Buckley teaches that a “typical” form of “the URI (or SIP address)” is in “the form of sip:<username>@<hostname>” (EX1005, 5:25-27, 7:1-2), and provides an example showing that the hostname can be an IP address (EX1005, 9:27:

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“Contact: sip:alice@**192.0.2.1**”); *see also* EX1010¹⁰, 149 (teaching that the host name can contain a IP address). Thus, Buckley teaches that a “typical” calling party’s SIP URI can be in the form of a network address that includes an IP address, which a POSITA would recognize (as the ’234 Patent admits was well known) is a location identifier. EX1005, 19:37-38 (“network address [] identifies [a] network location”); EX1001, 12:19-20 (“[T]he location identifier in the location identifier field [] may include an IP address”).

72. The caller’s URI is different than the callee’s URI for all calls (except for the rare instance when the caller has dialed himself or herself). The callee’s URI (callee identifier) is therefore necessarily separate and distinctive from the caller’s URI (location identifier) for all outbound calls.
73. As a further example, the SIP Invite (access code request) message can also include a P-Preferred-ID. EX1005, 8:67-9:20. “The P-Preferred-ID is set to the calling line identity (CLI) associated with the user or subscriber of the UE device for identification in the CS network”—in other words, a telephone number. *Id.*, 9:3-6, 9:20 (example “P-Preferred-Identity: <tel: +1-555-1001>”). A POSITA would have recognized that the telephone number includes a location identifier (e.g. a country or area code) for a telephone’s

¹⁰ EX1010 (RFC 3261) is cited in Buckley. EX1005, 5:29-33.

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network location in a circuit-switched (CS) network such as a PSTN. A POSITA would have also recognized that the country code and area code, and in some situations the telephone prefix (*i.e.*, the three digits in a telephone number before the final four digits), are each associated with the phone's location. *See* EX1001, 12:32-34 “([T]he location identifier may include a ... local calling area where the mobile telephone [] is or may be situated.”). The P-Preferred-ID is thus a location identifier that identifies the location of the caller's mobile telephone, and because it identifies the caller rather than the callee, it is also separate and distinctive from the callee identifier (*i.e.*, the callee's URI). *See id.*

c. **Element 30[b]**

74. In my opinion, Buckley teaches this element.

- i. “producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, ...”

75. Buckley teaches that the IMRN is based on the location identifier (which, as discussed above, can be either the caller's URI or P-Preferred ID) and/or based on a location pre-associated with the caller's mobile telephone. Specifically, Buckley teaches the IMRN can be constructed based on “some relationship(s) to one or more of the parameters received in a message ... from the UE device” or “may be mapped to *all the received SIP call information*”

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in the SIP Invite message. EX1005, 3:4-12, 4:41-49, 6:1-3. And, “all the received SIP call information” would include the caller’s SIP URI and, additionally, the P-Preferred-Identity. *Id.*, 5:47-53 (“The call information may include information such as ... [the] calling party’s SIP URI...”), 6:63-66 (“[T]he SIP Invite message 312 includes applicable call information such as ... the P-Preferred-Identity”). The SIP URI and P-Preferred Identity both include location identifiers for the caller’s mobile phone as discussed above in Element 30[a]. Thus, this mapping to “*all* the received SIP call information” bases the IMRN on the location identifiers and/or locations pre-associated with the caller’s mobile telephone, namely the caller’s SIP URI and/or P-Preferred ID.

76. Buckley’s IMRN identifies a communication channel. A POSITA would have understood that an E.164 telephone number (used in Buckley as an IMRN (access code) identifies a communications channel. The ’234 Patent confirms that a telephone number identifies a communication channel. *See, e.g.*, EX1001 3:30-32 (“[t]he access code may include a telephone number identifying a channel operably configured to cooperate with an IP network.”). Further, Buckley’s SIP messaging process described above creates a “SIP session” based on the IMRN (E.164 number), and a SIP session is a channel because it establishes the end-to-end communication pathway for the duration

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of the communication “session.” EX1005, 7:50-56 (“The IMRN is then interrogated against the record to retrieve the called party’s URI for ***establishing a SIP session with the called party*** (i.e. between the calling party (UE device) ... and the called party....”). EX1010 (RFC 3261),¹¹ 1 (“This document describes Session Initiation Protocol (SIP), an application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences. ... ***SIP makes use of elements called proxy servers to help route requests to the user’s current location***, authenticate and authorize users for services, ***implement provider call-routing policies***, and provide features to users. SIP also provides a registration function that allows users to upload their current locations for use by proxy servers.”). As part of establishing a SIP connection, the Real-Time Transport Protocol (RTP) carries the media stream (e.g., voice and video) along the SIP Channel. *Id.* 7:19-21 (“A cause value in the SIP Invite message will be set appropriately to indicate that a radio bearer channel for the session is to be established over the CS domain.”). The E.164 number thus identifies the channel and, as discussed above, is associated with the location identifier.

¹¹ RFC 3261 is expressly cited in Buckley. EX1005, 5:29-33.

- ii. “... said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and ...”

77. The SIP Response includes an IMRN (access code) that the UE uses to initiate a call to the callee using the channel identified by the IMRN. EX1005, 7:36-42 (“[T]he network node (in this example, the IMS AS node) dynamically allocates or otherwise identifies a selected IMRN mapped to the call information or parameters ... and returns it back to UE device 302 via SIP 380 [Response] message 316¹².”); EX1005, 6:37-43 (“Upon correlating the IMRN with the call reference number, the *UE sets up a call using the IMRN* that terminates on the AS node. The IMRN is then interrogated against the record to *retrieve the called party’s URI* for establishing a SIP session with the called party”). The IMRN (access code) is an E.164 number that is different from, and hence at the AS it must be “mapped to,” the callee’s URI (callee identifier). EX1005, 4:41-51. For example, Buckley teaches

¹² “380” in “SIP 380 Response” refers to an “Alternative Service” response code, which a responding server may use to indicate that it will connect the call in a different manner than was requested, and such a “SIP 380 Response” message in the context of Figure 3A refers to element 316. See EX1005, 7:41-42 (“SIP 380 message 316”), 7:49-50 (“SIP 380 Response message 316”).

“dynamically allocating or otherwise selecting the E.164 number [IMRN] to a received called party’s URI (e.g. SIP URI or Tel URI) and other received information; and providing the selected E.164 number to the originating UE device via a SIP 380 (Alternative Service) Response message” to provide access to reach the called party. EX1005, 4:52-57.

iii. “...wherein said access code expires after a period of time and”

78. Buckley teaches that the IMRN (E.164 number) (access code) expires after a period of time, using the “Timer” mechanisms identified, for example, in Figure 3A (elements 314, 326, 328, and 330). EX1005, 2:51-59 (“If the timer has expired, the mobile device may refrain from utilizing the E.164 number [access code] (now deassigned due to timer expiration) in the CS call setup message and alternatively obtain and utilize a new E.164 number....”); *see also id.*, 21:18-21 (“[A]fter assignment of the E.164 number to the UE device, the network node and/or UE device initializes a timer.... If the timer expires, the E.164 number becomes deassigned”).

iv. “... wherein producing said access code comprises selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and”

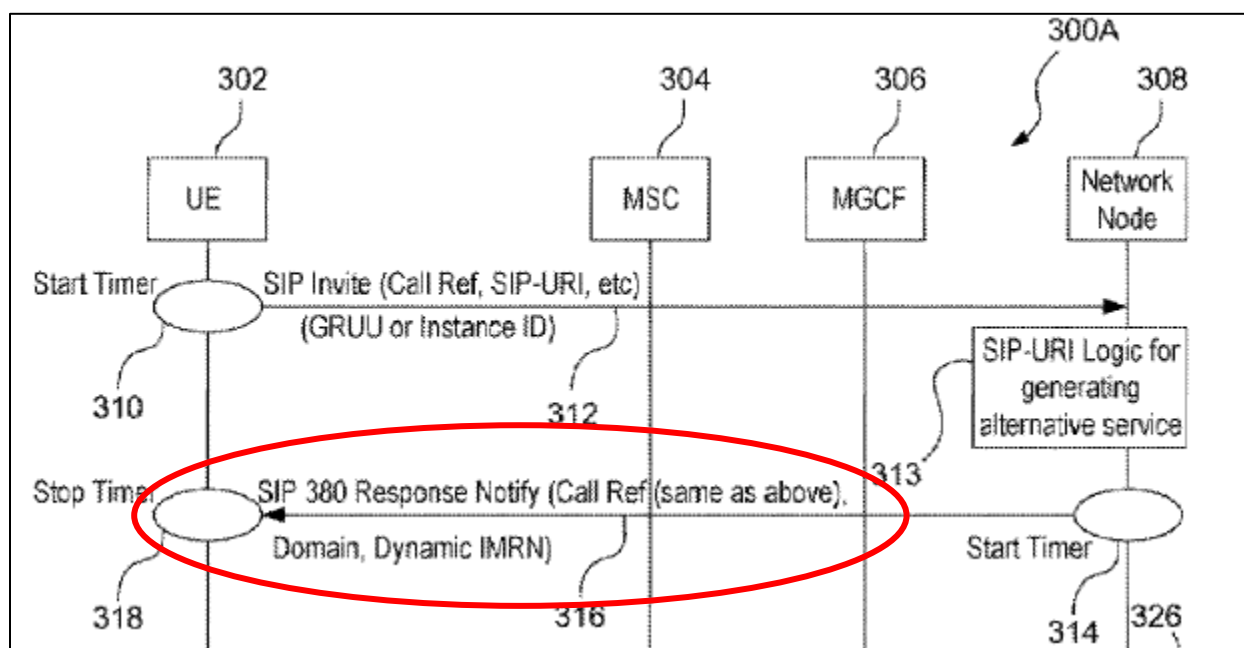
79. Buckley's home AS node selects the IMRN (access code) from a pool of IMRNs (access codes). EX1005, 8:54-61 ("[W]hen the UE device detects that it needs to invoke CS call origination, it may produce and send a SIP Invite message. [T]he SIP Invite message is set to indicate that the call needs to be set up over CS."); *id.*, 4:34-37 (AS node capable of "configuring and managing **a pool of IP multimedia routing numbers (IMRNs)** from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call routing....").
80. Each IMRN in Buckley's pool of IMRNs identifies a respective telephone or Internet Protocol (IP) network address, specifically a E.164 telephone number. *See* EX1005, 4:46-47 ("maintaining a pool of E.164 numbers that are operable as IMRNs"). Additionally, a POSITA would at least find it obvious that each access code in Buckley's pool of access codes identifies a respective telephone number or IP network address because Buckley's system is operational even if the pool only comprised one of those two options (namely E.164 numbers, as discussed above), let alone both, so is there no need to include anything other than such types of access codes to enjoy the benefits of Buckley's teachings. Another pool asserted is the subset of Buckley's IMRNs that each identify a respective telephone number or IP

network address. EX1005, 5:5-7 (“[I]t may be desirable to provide for different pools of IMRNs”).

d. **Element 30[c]: “transmitting an access code reply message including said access code, to the mobile telephone.”**

81. In my opinion, Buckley teaches this element.

82. As shown, for example, in Figure 3A below (cropped in relevant part), Buckley teaches that AS network node 308 (access server) transmits a SIP Response 316 (access code reply) message back to the UE 302 (mobile telephone):



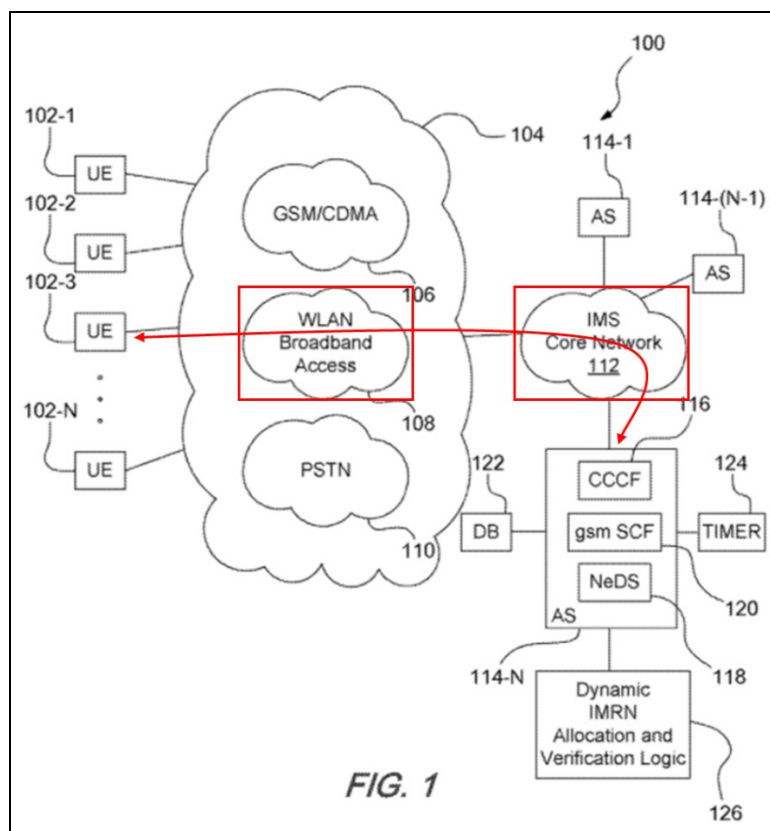
As shown within the circled portion of the figure above, the SIP Response message (access code reply message) includes an IMRN (access code). EX1005, 7:36-42 (“[T]he network node (in this example, the IMS AS node) dynamically allocates or

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otherwise identifies a selected IMRN mapped to the call information or parameters
... and returns it back to UE device 302 via SIP 380 [Response] message 316.”).

2. Claim 31: “The method of claim 30 wherein receiving comprises receiving said access code request message on a non-voice network.”

83. In my opinion, Buckley teaches this claim.

84. For example, Figure 1 depicts a UE (mobile telephone) connected to an AS (114-N) (access server) via a non-voice, packet switched (PS) network including a WLAN Broadband Access network (108) and the IMS Core Network (112) as annotated in red. EX1005, 3:23-24 (“[A]ccess space 104 [is] comprised of a number of access technologies available to a plurality of UE devices”), 3:41-43 (“The access space 104 may be comprised of both CS and *PS networks*, which may involve wireless technologies, wireline technologies, broadband access technologies, etc.”).



85. The UE transmits its SIP Invite (access code request message) “to an application server (AS) node in the IMS network” through this WLAN Broadband Access network, and thus the AS receives the SIP Invite message (access code request message). *Id.*, 14:33-36. PS networks, including the IMS and WLAN Broadband Access networks, are non-voice networks in the ’234 patent’s parlance because they carry IP data packets, not voice signals. EX1001, 11:51-52 (“non-voice network, such as an Internet, using WiFi or GPRS technology for example”).
86. A POSITA would also have found it obvious for the SIP Invite to be received through a non-voice network because the SIP Invite is not a voice signal, so

there is no specific need for a voice network to transmit the message, and a non-voice network would more efficiently handle such data communication. The SIP protocol is part of the TCP/IP protocol suite that is the foundation of the Internet and packet switching networks, which are non-voice networks, and thus it would be expected that the SIP Invite would be transmitted through a non-voice network because SIP was specifically designed for non-voice networks. For example, Buckley teaches that it was well-known that for IP networks, “IP is used to transport both bearer traffic [voice traffic] *and SIP-based signaling traffic.*” EX1005, 3:58-62.

3. Claim 32: “The method of claim 30 wherein producing said access code comprises causing a routing controller operably configured to route a call between said caller and said callee to produce said access code.”

87. In my opinion, Buckley teaches this element.
88. As the '234 Patent describes, “the access server 14 and the routing controller 30 need not be separate, but may, for example, be combined in a single component” and “the routing controller 30 executes a process to facilitate communication between callers and callees.” EX1001, 15:4-10. Buckley teaches a network node (308 in Figs 3A and 3B) where an AS (access server) is “provided with appropriate logic/structure/software/firmware module(s).” EX1005, 4:42-45. A POSITA would have understood that these modules comprise a routing controller operably configured to route a call between the

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caller and callee because these modules execute the process to facilitate communication between callers and callees described above with respect to Claim 1 where, for example, an E.164 number is used as an IMRN (access code). EX1005, 4:31-40 (“IP multimedia *routing* numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call *routing*”). For example, the AS contains modules that: “maintain[] a pool of E.164 numbers that are operable as IMRNs which terminate on the AS node,” select an E.164 number and map it a “called party’s” URI (callee identifier), “provid[e] the selected E.164 number to the originating UE device,” and “verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned” during CS call set up. *Id.*, 4:46-58. These modules are AS components that establish a call to the callee by, *inter alia*, verifying the IMRN has not timed out. EX1005, 4:57-60 (The modules “verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned (via conventional CS call setup) to AS 114-N for effectuating a SIP call session with respect to the called party.”); *Id.*, 8:2-4, (“If the IMRN has not timed out, the AS node [] may establish the SIP session based on the IMRN correlation.”); *id.*, 8:45-47 (“Regardless, once the IMRN is received at the AS node 308, appropriate call correlation is made to establish the SIP call between the UE and the called party.”); *id.*, 4:31-40

(“IP multimedia **routing** numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call **routing**”). Buckley also teaches that the “IMRN mapping” is used “for establishing the SIP session or call to the called party” and that it was “understood by those skilled in the art” to use further intermediate messaging and “resource allocation/reservation negotiations” such that a “bearer path is established between the UE device [] and the called party,” which meets, or at least renders obvious, the routing controller functionality in this claim element. *Id.*, 7:53-64.

89. These modules that comprise the routing controller produce the access code by selecting it from the pool of IMRNs. EX1005, *e.g.*, 4:31-37 (“Appropriate database structures (e.g. DB 122), timer mechanisms (e.g. timer 124) and suitable logic 126 may be provided in association with AS [] for purposes of configuring and managing a pool of IP multimedia routing numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call routing....”).

4. **Claim 33: “The method of claim 30 further comprising determining from said location identifier a local calling area associated with the mobile telephone and selecting an access code associated with a calling area matching said local calling area associated with the mobile telephone.”**

90. In my opinion, Buckley teaches this claim.

91. The IMRN “terminate[s] on the AS node” (*Id.*, 4:46-48), which is “disposed in the user’s **home** IMS network” and thus enables a local call matching the local calling area, because routing a call to the “home” node is inherently different from routing a call to something other than the “home” node, such that they are treated differently because a call routed to the “home” node is not routed to a non-“home” node. *Id.*, 7:29-34, 6:44-54 (teaching “message flow between the UE device **and the home IMS network’s AS node**” such that “the UE device and its **home IMS AS node [are] operable to facilitate CS-originated SIP calls**”), 8:22-47. The benefit of using a local number to avoid such charges was well known in the art. *See, e.g.*, EX1014, Abstract (teaching “a method of providing a local access number”), [0036] (“[T]he subscriber may use the local access number to connect to a chosen long distance service provider.”); EX1001 at 1:20-28 (“One known technique for avoiding the long distance charges of mobile telephone service providers is to use a ‘calling card’. A ‘calling card’ may permit the user of the mobile telephone to place a call to a local telephone number.... The user may thus avoid the long distance charges of the mobile telephone service provider, which may be higher than the charges for using the ‘calling card’.”). A POSITA would recognize that enabling such a local call is one of the benefits of “mapp[ing]” the IMRN to “**all** the received SIP call information,” as

Buckley teaches, and not ignoring the location information included in the SIP invite message. *See* EX1005, 6:2-3. A POSITA would therefore at least have found it obvious that the selected IMRN would enable a local call to be made to achieve these benefits, using the location information that Buckley already required in an IMRN selection process that it teaches. EX1005, 6:2-3. The IMRN (access code) is associated with a calling area matching the local calling area associated with the mobile telephone, which is how the IMRN enables a local call as discussed above.

92. As discussed above in Element 30[a][ii], the location identifier (the SIP URI and/or P-Preferred ID) identifies the location of the mobile telephone, so in Buckley's process of selecting an IMRN that enables a local call as discussed above, the local calling area associated with the mobile telephone must be determined from the location identifier.

5. Claim 35: "The method of claim 30 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network."

93. In my opinion, Buckley teaches this claim.
94. As discussed in Element 30[a], Buckley teaches that the SIP Invite message (*i.e.*, the access code requests message) includes the "calling party's SIP URI," which "may take on the form of sip: <username>@<hostname>." EX1005, 5:47-53, 5:25-27. A POSITA would have recognized that the

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hostname can “contain[] ... [a] numeric IPv4 or IPv6 address.” EX1010 (RFC 3261)¹³, 148-49). Buckley teaches an exemplary SIP URI of “sip:alice@192.0.2.1,” which includes an IP address as the hostname, namely “192.0.2.1”. EX1005, 9:27. This IP address is a location identifier of the mobile telephone, as a POSITA would have recognized that an IP address is a network address, and “a network address [] identifies [a] network location” (*id.* 19:37-38), and thus identifies the network location of the mobile telephone.

95. As discussed in Claim 31, Buckley teaches that the SIP Invite message (access code request message) is sent through a WLAN Broadband Access network, which includes “wireless local area networks,” and a POSITA would have understood this to include a wireless IP network in order to enable wireless capabilities at “broadband” speeds. EX1005, 3:51

6. Claim 38: “The method of claim 30 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.”

96. In my opinion, Buckley teaches this claim.

¹³ RFC 3261 is cited in relevant part in Buckley. EX1005, 5:29-33.

97. Buckley teaches that the IMRN (access code) identifies an IP network address of the called party such that the AS (access server) can set up a SIP session (channel) for the call. The IMRN (access code) is mapped to the called party's URI (callee identifier), which allows the AS (access server) to translate the IMRN to called party's URI when the UE sets up the call. EX1005, 6:38-40 (“[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party's URI”). The called party's URI can be a SIP URI, which Buckley teaches “typically” includes an IP network address. *See* EX1005, 6:63-65 (“[T]he SIP Invite message 312 includes applicable call information such as ... [the] called party's SIP URI...”); EX1005, 5:25-27 (“As is well known, a *typical* SIP address may take on the form of sip:<username>@<hostname>....”); EX1005, 9:27 (Buckley teaches an exemplary SIP URI of “sip:alice@**192.0.2.1**,” which includes an IP address in the hostname field.). In these situations, the AS establishes a SIP session (channel, as discussed in Element 30[b]) using the IMRN to identify the called party's SIP URI. EX1005, 7:50-56, Figure 3A, 6:39-43 (“The IMRN is then interrogated against the record to retrieve the called party's URI for *establishing a SIP session with the called party* (i.e. between the calling party (UE device) ... and the called party....”).

98. It would have been obvious to alternatively use an IP address as the access code (IMRN) (in addition to, or instead of, an E.164 telephone number) because an IMRN is an “**IP** multimedia routing number” and hence is ordinarily expected to carry an IP address. EX1005, 4:31-38. Buckley teaches that E.164 numbers are just one *example* of what an IMRN may comprise. EX1005, 15:56 (“a pool of IMRNs, (e.g., the E.164 numbers)”). Moreover, Buckley’s system has as its core an “**IP** multimedia subsystem (IMS) core network” that “is coupled to the various access networks ... including any CS-based networks.” EX1005, 3:56-58. As was “well known, the IMS standard defined by the 3GPP is designed to allow service providers [to] manage a variety of services that can be delivered via IP over any network type, wherein IP is used to transport both bearer [voice] traffic and SIP-based signaling traffic.” *Id.*, 3:58-62.
99. Buckley’s mobile telephone (UE) was preferably able to operate over both PSTN (CS) and IP (PS) networks in order to “transition from one mode of communications to another mode of communications without loss of continuity.” *Id.*, 3:35-40. “Furthermore, in order to effectuate call control of a SIP call using CS as the voice bearer,” Buckley’s IMS application server element in the home IMS network includes functionality that “tracks all call sessions and related mobile Voice-over-IP (VoIP) bearer traffic, between CS

and IMS domains.” EX1005, 4:18-25. It would have been obvious that Buckley’s AS should provide an IMRN (access code) that included, or at least identified, an appropriate IP address to take advantage of Buckley’s UE’s ability to transition from a PSTN (circuit-switched) mode to an IP (packet-switched) communication mode to reach the callee over Buckley’s IMS network.

7. Claim 39: “The method of claim 38 further comprising enabling communications between said caller and said callee to be established through an IP network in response to a call received at said IP network address.”

100. In my opinion, Buckley teaches this claim.

101. Buckley teaches the AS converts the CS call setup initiated by the UE with the IMRN (access code) to a SIP call setup on a PS network with the original callee URI. EX1005, 6:14-23 (“[A]ppropriate call setup is then initiated by the UE device using the selected IMRN, whereby the accepted IMRN is returned to the AS node since it terminates thereat. Upon receipt of the IMRN at the AS node ... the called party's SIP URI or Tel URI ... is utilized by the AS node for effectuating the SIP session with the called party by producing and sending a SIP Invite message”). Indeed, teaching the transition of calls initiated on a CS network to a PS network is Buckley’s purported invention. *See id.*, 1:24-28 (disclosing “managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem

(IMS) network [which is a PS network]”). The SIP call setup on a POS network establishes the call through a packet-switched IP network in response to a call received at the IP address that is or is mapped to the IMRN (as discussed above in Claim 38), as SIP is a process designed for IP networks.

8. **Claim 40: “The method of claim 30 wherein said access code request message includes a caller identifier and wherein the method further comprises associating said caller identifier included in said access code request message with the selected access code.”**

102. In my opinion, Buckley teaches this claim.

103. Buckley teaches that the SIP Invite message (access code request message) includes the caller identifier, namely the caller’s SIP URI. EX1005, 5:47-52 (“[T]he call information may include information such as ... [the] calling party’s SIP URI...”). Buckley further teaches the IMRN “may be *mapped to all the received SIP call information*,” which includes the caller’s SIP URI, and thus the caller’s SIP URI (caller identifier) included within the SIP Invite message (access code request message) is associated with the IMRN (access code) via a mapping. *Id.*, 3:10-12, 6:1-3.

9. **Claim 43: “The method of claim 30 wherein producing further comprises associating a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and causing said timestamp to be included in said access code reply message transmitted to the mobile telephone.”**

104. In my opinion, Buckley teaches this claim.

105. Buckley teaches that the AS can send a timestamp associated with the IMRN (access code) to the mobile telephone, where such timestamp can be used to determine when the access code expires. *See* EX1005, 20:21-25 (“[N]etwork node [] sends UE device [] a SIP 200 OK message [] which has the selected E.164 number contained within it. A time or timer value which defines a time period for which the selected E. 1 64 number remains assigned to UE device [] may also be included.”); *id.*, 21:18-21 (“[A]fter assignment of the E.164 number to the UE device, the network node and/or UE device initializes a timer with the timer value and runs the timer. If the timer expires, the E.164 number becomes deassigned”). Buckley teaches including the timestamp in the SIP Response message (access code reply message) because the UE needs the timestamp for the “UE device [to] initialize[] a timer with the timer value” (EX1005, 21:18-21), and Buckley teaches that timer information is “normal[ly]” included in SIP Response messages. EX1005, 7:25-28 (“It should be appreciated that this timer may be provided in addition to normal SIP timers as this operation is known to provide a SIP 380 Response with specific information within a certain timeframe.”). A POSITA also would have found it obvious to include such timer information in the SIP Response message (access code reply message) to provide the UE (mobile phone) with the time information Buckley teaches the UE needs to initialize a timer, and

because time information is already included in the SIP Response message
such that it would be efficient to additionally include similar time information.

10. Claim 45: “The method of claim 30 wherein transmitting comprises transmitting said access code reply message on a non-voice network.”

106. In my opinion, Buckley teaches this claim.

107. Buckley teaches a UE and AS (access server) connect via a non-voice, packet-switched network. *See* Claim 31.

108. Buckley teaches the IMRN is transmitted from the network node via a packet-based SIP 380 Response (access code reply message) over a non-voice PS network. *See id.*, 30:23-34 (The mobile communication device “receive[s] a SIP 380 (Alternative Service) Response message from the IMS [*IP* Multimedia Subsystem] network”). A POSITA would also have found it obvious that the access code reply message could be transmitted through another type of non-voice network because the access code reply message is not a voice signal, so there is no specific need for a voice network to transmit the message, as a non-voice network could efficiently handle such data communication.

11. Claim 46

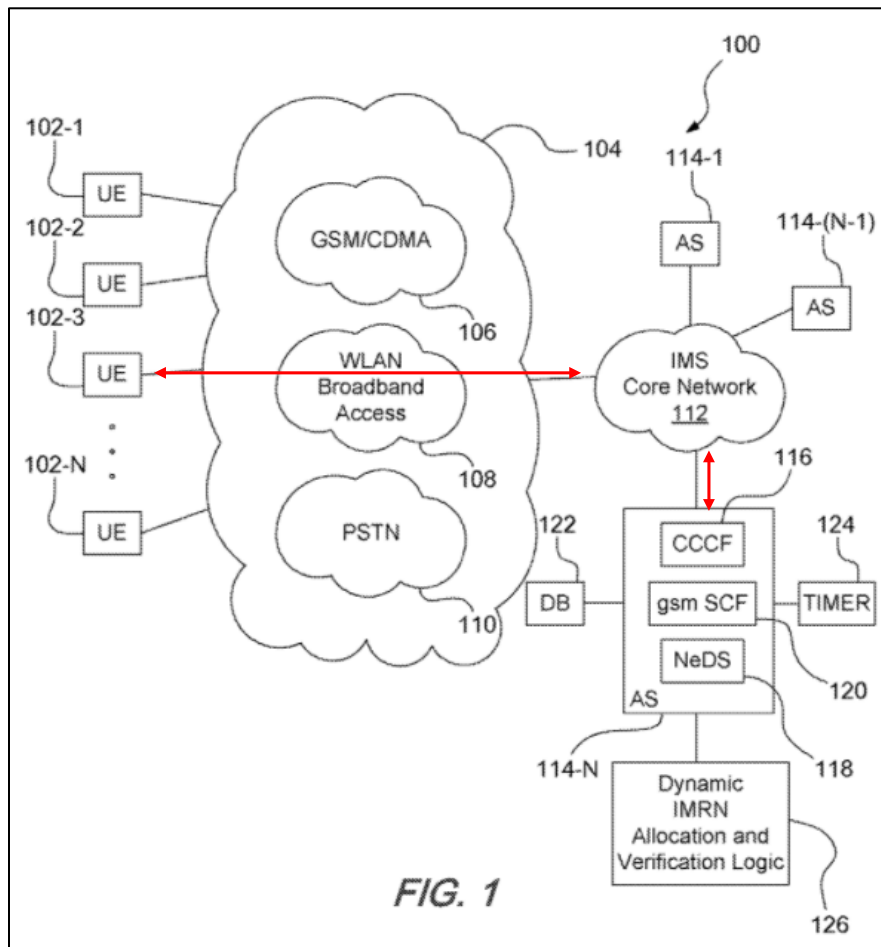
- a. **Element 46[preamble]: “A system for enabling mobile telephone roaming, the system comprising”**

109. In my opinion, Buckley teaches a system for enabling mobile telephone roaming. *See* Element 30 [preamble]; EX1005, 1:23 (“a system”).

- b. **Element 46[a]: “means for receiving from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;”**

110. In my opinion, Buckley teaches means for receiving, which the parties agree incorporates the structure of “a network interface.” Buckley teaches the application server or AS has a network interface that allows communication with the UE via the IMS core network, as depicted, for example, in Figure 1. Figure 1 depicts network “infrastructure,” which a POSITA would have understood to include the hardware and software interfaces necessary to send and receive network messages as described throughout Buckley’s disclosure. EX1005, 1:65-67.; *see also id.* 3:56-58 (describing that the networks are “coupled”); *id.*, 4:41-43 (describing that the AS node as “appropriate logic/structure/software/firmware module(s)... .”); *id.*, 6:44-50 (confirming that POSITA would recognize that the message flow “may be mediated through a number of other appropriate network infrastructure elements” as appropriate to the device capabilities, network features, and network protocols

being used). A POSITA would have understood that the AS depicted in Figure 1 contains a network interface to connect to the “IMS Core Network” and ultimately to the UE, as annotated in red, because without such a network interface, it is unclear what the lines in the diagram would be intended to convey or how Buckley would be operable.



111. Buckley teaches the remaining portions of this element. *See* Element 30[a].

- c. **Element 46[b]: “means for producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, said access code being different from the callee identifier and useable**

by the mobile telephone to initiate a call to the callee using the channel and wherein said access code expires after a period of time and wherein said means for producing said access code comprises means for selecting said access code from a pool of access codes wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and”

112. In my opinion, Buckley teaches this element.

113. Buckley teaches an access server in the form of its AS. *See* Element 30[b].

Moreover, the application server has “one or more *processors*” (EX1005, Cl. 34) and is “provided with *appropriate logic/structure/software/firmware module(s)*” (*id.*, 4:2-3, 4:42-43) that act as a routing controller (*see* Claim 32).

The AS and associated routing controller produce an IMRN (access code) that identifies a communication channel based on the location identifier (caller’s SIP URI and/or P-Preferred ID), where the IMRN (access code) is different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel and wherein the IMRN (access code) expires after a period of time. *See* Element 30[b]. The IMRN enables a local call matching the local calling area. *See* Claim 33. Buckley further teaches a means for selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address. *See* Element 30[b]. Buckley also teaches “[a]ppropriate database structures (e.g. DB 122), timer

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mechanisms (e.g. timer 124) and suitable logic 126 may be provided in association with AS 114-N for purposes of configuring and managing a pool of [IMRNs].” EX1005, 4:31-35. A POSITA would have recognized appropriate database structures to include a table with defined ranges from which the IRMNs are assigned. *Id.*, (“a particular E.164 number may be provided as a ‘starting address’ number of an IMRN range. Another E.164 number may operate as a range delimiter.”). This is performed by the AS with its associated “appropriate logic/structure/software/firmware module(s)” (routing controller) that has a processor that perform the algorithm of Figure 7 of the ’234 Patent. *See* Elements 30[a]-[c].

d. **Element 46[c]: “means for transmitting an access code reply message including said access code to the mobile telephone.”**

114. In my opinion, Buckley teaches this element. *See* Elements 30[c] and 46[a].

12. Claim 47: “The system of claim 46 wherein said means for receiving comprises a non-voice network interface for receiving said access code request message on a non-voice network.”

115. In my opinion, Buckley teaches this claim. *See* Claim 31; Element 46[a].

13. Claim 48: “The system of claim 46 wherein said means for producing said access code comprises a routing controller operably configured to route a call between said caller and said callee.”

116. In my opinion, Buckley teaches this claim. *See* Claim 32; Element 46[b].

- 14. Claim 51: “The system of claim 46 wherein said location identifier includes an IP address of the mobile telephone in a wireless IP network.”**

117. In my opinion, Buckley teaches this claim. *See* Claim 35.

- 15. Claim 54: “The system of claim 46 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.”**

118. In my opinion, Buckley teaches this claim. *See* Claim 38.

- 16. Claim 61: “The system of claim 46 wherein said means for transmitting comprises a non-voice network interface for transmitting said access code reply message on a non-voice network.”**

119. In my opinion, Buckley teaches this claim. *See* Claim 45; Element 46[c].

17. Claim 62

- a. Element 62[preamble]: “A system for enabling mobile telephone roaming, the system comprising”**

120. In my opinion, Buckley teaches a system for enabling mobile telephone roaming. *See* Element 46[preamble].

- b. Element 62[a]: “a processor circuit;”**

121. In my opinion, Buckley teaches this element. *See* Element 46[b].

- c. Element 62[b]: “a network interface in communication with said processor circuit; and”**

122. In my opinion, Buckley teaches this element. *See* Element 46[a]-[b].

123. Buckley also teaches the processors are “adapted to process the CS call by being further adapted to: receive a SIP Invite message,” which requires a

network interface to receive. EX1005, 28:43-46. A POSITA would have understood that that network interface would be in communication with a processor to make network communications, because the network interface by itself is not sufficient to “process the CS call”—a processor is needed to process calls. *See* EX1005, 18:33-38 (“When the network node receives the SIP Invite message from the UE device, it correlates it with the additional SIP Invite message from the network based on the stored mapping, the identification of the UE device, and the assigned E.164, for further *processing* of the SIP call.”).

- d. **Element 62[c]: “a computer readable medium in communication with said processor circuit and encoded with codes for directing said processor circuit to:”**

124. In my opinion, Buckley teaches this element. *See* Element 46[b]. There must be some place to store the “software/firmware module(s)” that Buckley teaches is provided on the AS, and that is the purpose of memory, which is a computer-readable medium that is encoded with software and firmware codes with “logic/structure” for performing that actions performed by the AS as discussed above.

- e. **Element 62[d]: “receive from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee**

identifier, identifying a location of the mobile telephone;”

125. In my opinion, Buckley teaches this element. *See* Element 30[a].

- f. **Element 62[e]: “communicate with a routing controller to obtain from said routing controller an access code identifying a communication channel, said access code being determined from said location identifier and/or based on a location pre-associated with the mobile telephone and said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and wherein said access code expires after a period of time and wherein said access code is selected from a pool of access codes and wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and”**

126. In my opinion, Buckley teaches this element. *See* Element 30[b]; Claim 32.

- g. **Element 62[f]: “cause an access code reply message including said access code to be transmitted to the mobile telephone.”**

127. In my opinion, Buckley teaches this element. *See* Element 30[c].

- 18. **Claim 64: “The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to cause a routing controller to produce said access code.”**

128. In my opinion, Buckley teaches this element. *See* Claim 32.

- 19. **Claim 65: “The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to determine from said location identifier a local calling area associated with the mobile telephone and to select an access code associated with a**

calling area matching said local calling area associated with the mobile telephone.”

129. In my opinion, Buckley teaches this element. *See* Claim 33.

20. Claim 67: “The system of claim 62 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network.”

130. In my opinion, Buckley teaches this element. *See* Claim 35.

21. Claim 70: “The system of claim 62 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.”

131. In my opinion, Buckley teaches this element. *See* Claim 38.

22. Claim 72: “The system of claim 62 wherein said access code request message includes a caller identifier and wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate said caller identifier included in said access code request message with the selected access code.”

132. In my opinion, Buckley teaches this element. *See* Claim 40.

23. Claim 75: “The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and to cause said timestamp to be included in said access code reply message.”

133. In my opinion, Buckley teaches this element. *See* Claim 43.

B. Ground II: Claims 38-39, 54, and 70 Are Rendered Obvious over Buckley in View of Ejzak.

1. Motivation to Combine

134. A POSITA would have been motivated to modify Buckley with Ejzak because both references are in the field of call routing and are directed to the same problem of improving call routing, including specifically across packet-switched and circuit-switched networks. *Compare* EX1005 (Buckley), Abstract (“Methods and apparatus for use in processing Session Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network”), *with* EX1007 (Ejzak), 2:35-38 (“[T]he present invention provides a communication system that ... allows for interworking between CS domains and PS domains.”). Further, as described in the background sections above, Buckley and Ejzak rely on a substantially similar network architecture, employing network entities with substantially the same functionality throughout. *Compare* EX1005 (Buckley), Figure 3A *with* EX1007 (Ejzak), Figure 1 (element 141) and Figure 3.
135. A POSITA also would be motivated to combine the references to use Ejzak’s known technique to improve Buckley and to help achieve Buckley’s expressly desired advantages. As background, Ejzak teaches responding to a SIP Invite message by determining how to route a call that may transition between PS

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- and CS networks. *See* EX1007 (Ejzak), 8:58-9:12. Buckley's preferred embodiment specifically desires that capability of seamless transitions between such two networks. *See* EX1005 (Buckley), 3:35-40 ("Preferably, the UE device is capable of operating in multiple modes in that it can engage in both circuit-switched (CS) as well as packet-switched (PS) communications, and can transition from one mode of communications to another mode of communications without loss of continuity."). A POSITA would thus be motivated to combine Ejzak with Buckley to help achieve such transitions "without loss of continuity" by determining how to route a call that may transition between such networks in accordance with Ejzak's teachings.
136. A POSITA also would have been motivated to modify Buckley to query Ejzak's DNS/ENUM server with an E.164 address to identify a corresponding IP address that enables routing a call over an IP network, because an IP address would help ensure that calls can be completed to VoIP phones, and packet-switched IP networks, that lack direct PSTN access. This further achieves Buckley's goal of "managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem (IMS) network" where a PSTN call may be completed over an IP network or where a particular user device may be operating over only an IP network. EX1005 (Buckley), 1:22-28, 1:51-57. Thus, basic market forces for enhanced

reach and operability would prompt enhancing Buckley's design in accordance with Ejzak's teachings.

137. A POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak. Buckley's system takes place in the context of SIP messaging, which Ejzak also employs. EX1005, 2:30-34 ("Methods and apparatus suitable for use in processing ***Session Initiation Protocol (SIP)*** calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network are described."); EX1007, 3:16-20 ("[T]he present invention is designed to utilize emerging Internet standards and protocols. An example of this is the use of ***Session Initiation Protocol (SIP)*** for IMS signaling for establishing a call."). As Ejzak expressly recognizes and a POSITA would have understood, SIP is flexible by design and can accommodate the addition of new features. EX1007, 15:30-43 ("SIP has sufficient protocol features and extensibility to allow realization of enhanced features and services. ... It is possible to define new features and provision their availability per subscriber, along with any parameters governing operation of the feature.... SIP option tags allow for independent definition of arbitrary new features, parameters associated with those features, and procedures associated with those features.").

138. Ejzak teaches that its architecture “enables *home control* of all services—whereby the IMS provides feature and service *control from the home network* rather than the serving network—to be available for all circuit-switched services,” and Buckley’s preferred messaging protocol expressly requires using the “home IMS network’s AS node.” EX1007, 1:64-67; EX1005, 6:45-46. Buckley further expressly teaches that its “message flow between the UE device and the home IMS network’s AS node may be mediated through a number of other appropriate network infrastructure elements” including a “mobile switching center (MSC) and a media gateway control function (MGCF) element” in the network. EX1005, 6:45-47; 6:51-53. Ejzak provides implementations for such “appropriate network infrastructure elements” that can map numbers to IP addresses and route bearer (voice) traffic over an IP network, including a Mobile Switching Center (MSC), an enhanced “interworking MSC (iMSC),” Mediate Gateway Control Functions (MGCF), and Domain Name Service (DNS) entities. EX1007, Figure 1, 1:11-12; 5:14; 4:40; 8:30; 8:36-43. The teachings of Ejzak are thus readily incorporated into Buckley’s network and SIP messaging, which is by its nature sufficiently flexible to accommodate the adoption of features such as Ejzak’s.
139. A POSITA also would have had a reasonable expectation of success in combining Buckley with Ejzak because Buckley teaches that it would “be

further recognized by those skilled in the art that the message flow between the UE device and the home IMS network's AS node may be mediated through a number of other appropriate network infrastructure elements, and may be implemented in a number of ways depending on the device capabilities as well as the network features and protocols being used." EX1005, 6:44-50. Buckley thus teaches that a POSITA would have readily understood how to implement the system in a matter that routes the traffic appropriately across the specific types of networks being used; as a result, a POSITA would have understood that Ejzak's DNS could be readily used to map a E.164 telephone number to an IP address (*i.e.*, for the E.164 access code to identify an IP address) in order to have the bearer traffic (the voice call) traverse an IP network, as taught in both Buckley and Ejzak. EX1005, *e.g.*, 6:50-54 (teaching one "typical[]" message flow for "CS-originated SIP calls" that could terminate on a VoIP phone).

2. Claim 38¹⁴

140. In my opinion, Buckley in view of Ejzak renders this claim obvious. *See* Ground I, Claim 38.

¹⁴ The complete text of the claims' corresponding portions is available in the claim listing attached hereto as Appendix A.

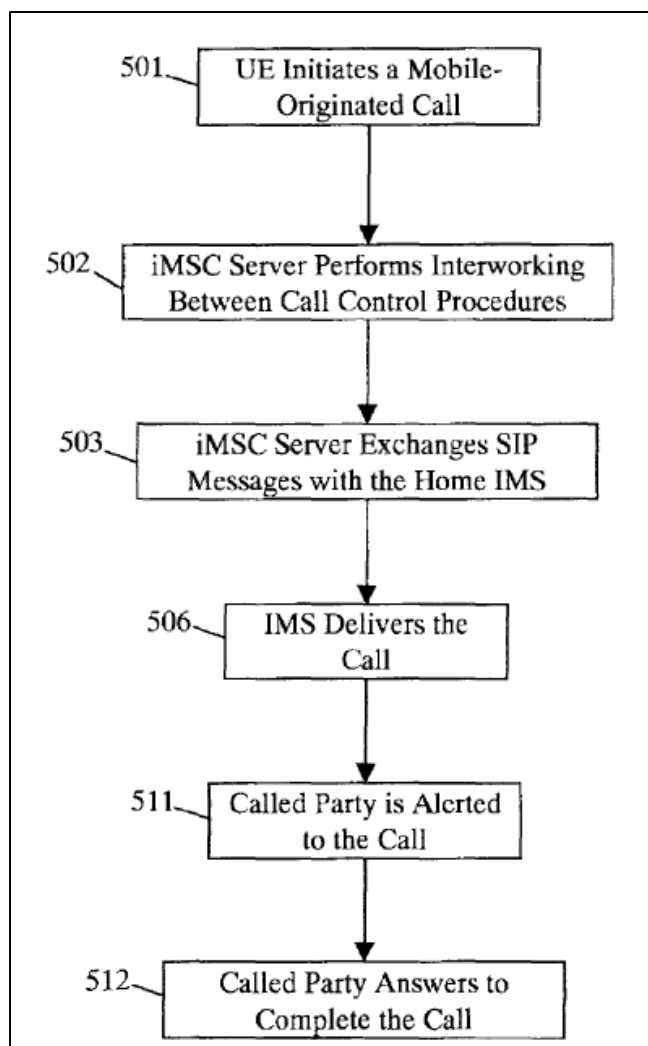
141. Ejzak teaches identifying a “replacement” IP address as a possible communications channel through which calls can be conducted, if the server determines that the call is to take place over a packet-switched network. *See* EX1007 8:67-9:1 (“DNS query resolves the replacement domain name to a set of *IP addresses*.”). A POSITA would have recognized that Ejzak’s IP addresses are a possible channel through which the call can be conducted, including because Ejzak teaches that IP addresses can be used to connect to “media *channels*.” EX1007, 5:8-9. The purpose of Ejzak assigning an IP address is to complete a call, which requires a communication channel. EX1007, Figure 5. In the combination asserted in this ground, Ejzak’s “replacement” IP address would be included within Buckley’s pool of access codes, intended for use in the event the call is to occur over an IP network. EX1005, 5:5-7 (“[I]t may be desirable to provide for different pools of IMRNs”).
142. Ejzak’s system also includes a DNS/ENUM service that interchangeably maps E.164 numbers to an appropriate IP address to route the call, and vice versa, including in the event that the call may need to transition from a PSTN to a VoIP call. EX1007, 8:29-36, 8:43-48. Hence, it would have been obvious that each E.164 number in Buckley’s pool of IMRNs (access codes) also “identifies an IP network address as a possible channel through which said

call can be conducted” as this claim requires, because Ejzak teaches that it was well-known and beneficial to use DNS/ENUM services for that purpose, particularly for networks and devices that provide for both communication modes.

143. It also would have been obvious for the access code communicated back to the mobile telephone to be an IP address (as the IMRN or in addition to it), as discussed above, so that a mobile telephone transitioning to or initiating a VoIP call could communicate directly with the network entities for the IP network identified by Ejzak’s network selection procedures.

3. Claim 39

144. In my opinion, Buckley in view of Ejzak renders this claim obvious. *See Ground I, Claim 39.*
145. Ejzak also teaches enabling communications between the caller and the callee in response to a call received at the IP network address. For example, “FIG. 5 depicts a flow chart 500 of a mobile unit originating a call with the communication system of the present invention” (EX1007, 13:58-60):



As can be seen, the communications are enabled because the called party (*i.e.*, callee) is able to answer the call, in response to a call received at the IP address discussed in Claim 38.

146. In my opinion, Ejzak further teaches that such communications would be established through an IP network. EX1007, 1:55-58 (“The present invention enables an IP Multimedia Subsystem (IMS) to support features and services for mobile units using either circuit-switched or IP Multimedia call control

procedures.”). Indeed, establishing the communication through an IP network is one of the reasons that the DNS query would “resolves the replacement domain name to a set of *IP addresses*.” EX1007, 8:67-9:1.

4. Claim 54

147. In my opinion, Buckley in view of Ejzak renders this claim obvious. *See* Ground I, Claim 54; Ground II, Claim 38.

5. Claim 70

148. In my opinion, Buckley in view of Ejzak renders this claim obvious. *See* Ground I, Claim 70; Ground II, Claim 38.

C. Ground III: Claims 30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75 Are Obvious Over Buckley in View of Bates.

1. Motivation to Combine

149. Bates builds upon Buckley’s disclosed transmission of location information, and further informs a POSITA why such location information is important in selecting a temporary number that will optimize call routing and enable a local call. A POSITA would have been motivated to modify Buckley with Bates for a number of reasons.

150. Both references are in the field of call routing and are directed to improving call routing. Both teach methods of routing PSTN and VoIP calls across packet-switched networks and circuit-switched networks. *Compare* EX1005 (Buckley), Abstract (“Methods and apparatus for use in processing Session

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Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network”), *with* EX1009 (Bates), 14:26-31 (Invention “enabl[es] interoperability of non-traditional communication networks with established, traditional PSTN-based emergency services.”).

151. The similarities between references is substantial, and a POSITA therefore would have had a reasonable expectation of success in combining Buckley with Bates. For example, both references teach selecting temporary telephone numbers to allow calls to be transferred between IP (*i.e.*, packet-switched (PS)) and circuit-switched (CS) (*e.g.*, PSTN) networks. *Compare* EX1005 (Buckley), 4:26-40, *with* EX1009 (Bates), 14:2-8, 26-37. Both references also teach selecting telephone numbers from a pool of numbers that are temporarily assigned in response to a communication request. *Compare* EX1005 (Buckley), 4:46-49, *with* EX1009 (Bates), 1:32-37. The analogous overlap can also be seen in comparing, for example, Figure 3A of Buckley with Figure 7 of Bates, as discussed above in Section VII.A-B.
152. A POSITA also would have had a reasonable expectation of success in combining the references because Buckley expressly contemplates routing emergency calls, and Bates seeks to improve on such routing. For example, Buckley teaches XML code for establishing registration information used for

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emergency calls.¹⁵ See EX1005 11:28-43 (“<!ELEMENT alternative-service (type, action, ics-mo-address, reason)> <!ELEMENT type (emergency | MO-call)> ... <!ELEMENT action (emergency-registration)>”), 12:8-18 (e.g., “xs:element name=‘emergency-registration’”). A POSITA would therefore have understood that Bates’s techniques and rationale for selecting a geographically-correct telephone number (described in further detail below) could be utilized by Buckley’s system to select a local IMRN E.164 telephone number in the interest of optimizing routing decisions, including ensuring proper routing of emergency calls and avoiding unnecessary long distance and roaming charges. Multiple prior art references from the same inventor (Buckley, and also Andrew Allen) and assignee (Research in Motion) further confirm that a POSITA would have understood from Buckley’s disclosure that Buckley’s system included ensuring proper routing of emergency calls. See EX1006, 11:31-45 (“In other XML coding schemes, various additional elements may also be provided to indicate emergency sessions.... [A] <type> child element, set to ‘emergency’ to indicate that it was an emergency call”);

¹⁵ IETF RFC 4826 defines “XML Formats for Representing Resource Lists.” IETF RFC 4190 defines “Frameworks for Supporting Emergency Telecommunication Services (ETS) in IP Telephony.”

EX1008, [0041]-[0042] (“XML body that includes an <alternative service> element with the <type> child element set to ‘emergency’, the UE shall automatically send an ACK request.... The UE can attempt an emergency call setup in the CS domain according to the procedures described in 3GPP TS 24.008.”), Figure 6 (“emergency-registration”). And Buckley’s SIP system is capable of accounting for Bates’s location information. *See* EX1010 (RFC 3261),¹⁶ 1 (“SIP also provides a registration function that allows users to upload their current locations for use by proxy servers.”).

153. A POSITA also would have had a reasonable expectation of success in combining, and be motivated to combine, Buckley and Bates because they both teach techniques for establishing channels for bi-directional communication. Buckley’s IMRN access code, which may be an E.164 telephone number as discussed above in Ground I, identifies a channel for communication. *See, e.g.*, EX1001 3:30-32 (“The access code may include a telephone number identifying a channel operably configured to cooperate with an IP network.”). So too does Bates’s geographically-correct telephone number identify a channel for communication. EX1009, 3:43-50, Figure 4 (“Establish the Communication Session Including the Temporary Telephone

¹⁶ RFC 3261 is expressly cited in Buckley. EX1005, 5:29-33.

Number”). Buckley’s and Bates’s techniques for mapping such temporary numbers to call participants identifies the channels on which those participants communicate.

154. A POSITA would also have been motivated to modify Buckley with the teachings of Bates to produce better routing results, including for routing local calls. Buckley teaches the IMRN can be constructed based on “some relationship(s) to one or more of the parameters received in a message ... from the UE device” in the SIP Invite message. EX1005, 3:4-12, 4:41-49. But Buckley does not expressly teach all the “relationship(s)” that a POSITA may use to map the received information to an IMRN. A POSITA would have been motivated to select available and known techniques for creating such relationships and mappings to embody Buckley’s system. Bates provides one such technique that determines a “***geographically-correct telephone number*** (e.g., a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area).” EX1009, 3:43-50. A POSITA would thus appreciate that Bates’s “geographically-correct” relationship technique is a known technique that can be used to improve or carry out Buckley’s similar system with predictable results, and was an obvious-to-try option for mapping

IMRNs to the “received SIP call information” that yields predictable results (a local call).

155. Bates teaches the communication service that selects temporary telephone numbers may do so whenever the server “determine[s] that the type of communication session requested by the user communication device 110 would benefit from having a temporary telephone number.” EX1009, 7:55-64; *Id.* 11:26-31 (“The communications service provider 120 determines whether the type of communication session would benefit from a temporary telephone number (420). In one implementation, the communications service provider 120 may analyze the communication session request to determine whether a temporary telephone number would be beneficial.”). Bates further teaches using a “geographically-correct telephone number” allows “the temporary telephone number [to be] used to ... route the call to the appropriate public safety answering point [(PSAP)] for the location of the user communication device 110,” which is helpful to ensure, for example, that a mobile phone caller with a Los Angeles area code does not get connected to the Los Angeles 9-1-1 when that caller is traveling in New York. *See* EX1009, 12:28-32. Thus, a POSITA would have been motivated to modify Buckley with Bates to produce better call routing results, including in the emergency services context. Additionally, as discussed above, a POSITA would have

known that selecting a “geographically correct” local telephone number can produce a local call that avoids long distance and roaming charges, providing further motivation to modify Buckley with Bates’s techniques to obtain these predictable and desirable results. *See* EX1014, Abstract, [0036]; EX1001, 1:20-28.

2. Claim 30¹⁷

a. Element 30[preamble]

156. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 30[preamble]. Further, Bates additionally teaches that the mobile phone would be roaming. EX1009, 4:43-47 (“[T]he user communication device 110 may be mobile such that the user communication device 110 may establish a connection with communications service provider 120 at multiple different points in data network 130 located in multiple different geographic areas.”).

b. Element 30[a]

157. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 30[a].

¹⁷ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

158. Bates teaches “a request to place a call to a call recipient is received from the user” EX1009, Abstract. Moreover, Bates teaches the “user *places a call* for emergency services (e.g., a *9-1-1 call*).” *Id.*, 3:39-40. The 9-1-1 number is a callee identifier associated with the callee, which is emergency services.
159. Bates teaches the service “receive[s] a request from the user communication device [] to establish a communication session with the recipient communication device,” and “the *location key* [(location identifier)] may be included in the request.” EX1009, 11:12-15, 12:7-8. “The location key is an identifier used by the communications service provider 120 to identify a particular location” of the user’s mobile telephone. *Id.* 9:27-29. That location key may be input by the user for transmission to the service provider’s access server. *Id.*, 8:56-9:1 (“[T]he user provides his or her current location by explicitly providing his or her address (e.g., entering location in a text box provided in a graphical user interface (GUI) of the communications service provider 120 or orally reciting location in a voice communication). In another implementation, the communications service provider 120 maintains a list of potential locations for the user and the user selects a location from a list provided by the communications service provider....”). Thus, Bates teaches that the access code request message includes a location identifier (Bates’s

“location key”) that is separate and distinctive from said callee identifier (9-1-1, in the asserted combination).

c. Element 30[b]

160. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 30[b].

161. Bates teaches “the communications service provider [] maintains a pool of telephone numbers.” EX1009, 10:11-14, 19-21. From among that pool, Bates teaches techniques to “select a temporary telephone number that corresponds to the location of the user communication device.” EX1009, 18:67-19:2. “The temporary telephone number is a geographically-correct telephone number” that enables a local call because a geographically-correct telephone number “route[s] the call to the appropriate public safety answering point for the location of the user communication device.” *Id.* 19:53-55, 12:30-31. For example, Bates teaches selecting “a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area.” EX1009, 3:43-50. In the asserted combination, Bates’s technique for selecting a “geographically-correct telephone number” from among its pool of such numbers determines Buckley’s selection of IMRN from a pool of telephone (E.164) numbers

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(access codes) to ensure that a local call is made so that the correct emergency services is contacted and no unnecessary long distance or roaming charges are incurred. *See* EX1009 3:54-56 (Teaching the system “routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number”). As a result, Bates’s “geographically-correct telephone number” is an access code that is based on the mobile telephone’s location identifier and/or based on a location pre-associated with the mobile telephone.

162. Bates’s technique is used to select a “geographically-correct telephone number” in Buckley’s system, which would satisfy the elements of the claim similar to how Buckley’s IMRN relied upon in Ground I satisfied the elements. The “geographically-correct” IMRN would still yield an access code that identifies a communication channel, because it is an E.164 telephone number that identifies the pathway for end-to-end communications during the communication session. The circuit itself is a channel in a circuit-switched network, where information entered into one end is transmitted directly to the other end, while in a packet-switched network, the purpose of Session ***Initiation*** Protocol is to establish the communication channel via RTP protocol that carries the media stream (*e.g.*, voice and video). EX1001 3:30-33.

163. It is still different from the callee identifier, because Bates’s geographically-correct telephone number selection technique, when applied in Buckley’s system, will have a local area code, such as 202 in the Washington, D.C. example, that is different than the emergency number dialed (e.g. 9-1-1). EX1009, 3:42-50. It is useable by the mobile telephone to initiate a call to the callee using the channel (EX1005, 6:37-43), and would still expire after a period of time. *See* EX1009, 12:44-51 (System “may wait a threshold amount of time ... prior to returning the temporary telephone number to the pool of available telephone numbers.”); EX1005, 21:18-21. In other words, applying Bates’s technique for selecting a “geographically-correct telephone number” to Buckley’s system yields an IMRN that still meets all the elements of the claim.

164. The remaining components of this element are taught by Buckley as described above in Ground I, Element 30[b].

d. Element 30[c]

165. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 30[c].

3. Claim 31

166. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 31.

4. Claim 32

167. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 32.

168. Bates’s “emergency services proxy server” comprises a routing controller operably configured to route a call between the caller and the callee because it establishes a call to or from the appropriate PSAP while informing the PSAP of the UE’s location. *See* EX1009, 13:61-14:1 (“[T]he emergency services proxy server 524 may be configured to ... relay the request to enhanced emergency service provider”); *Id.*, 3:53-57 (“The traditional emergency services call handling system routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number and establishes the emergency services call between the user and the PSAP”); Element 30[b]. In the asserted combination, the “logic/structure/software/firmware module(s)” that Buckley teaches is provided on the AS for purposes of producing the access code are part of Bates’s emergency services proxy server that comprises a routing controller. EX1005, 4:42-45.

5. Claim 33

169. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 33.

170. Bates also teaches selecting a telephone number (access code) associated with the local calling area of the telephone because Bates teaches a technique for selecting a “***geographically-correct telephone number***” to “route the call to the ***appropriate public safety answering point for the location of the user communication device.***” EX1009 13:62-63, 12:30-31. For example, Bates teaches selecting “a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area).” EX1009, 3:43-50. The 202 area code in the above example represents the mobile telephone’s local calling area associated with the mobile telephone, and applying its technique in selecting a “geographically-correct telephone number” to Buckley’s system would result in an access code (*i.e.*, the geographically-correct telephone number) that is associated with a calling area matching the local calling area associated with the mobile telephone (in this example, the 202 area code associated with the call in the Washington, D.C. area). Bates teaches that the “geographically-correct telephone number” can be determined from its “location key” identifier. *See* Element 30[a].

6. Claim 35

171. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 35.

172. Bates also teaches the location identifier is an IP address. *See* EX1009, 9:4-9 (“[T]he communications service provider 120 may ***determine a current location*** of the user communication device 110 ***based on an IP address the user communication device*** is using to connect to the data network 130”). Bates also teaches the user communication device may be “a wireless phone” that connects via a “data network [that] may include ... a wired or ***wireless*** data pathway.” *id.*, 4:22-23, 6:10-13. A POSITA would recognize that when the user communication device is connected to a wireless network, its IP address would be wireless IP network address, because IP addresses are network addresses.

7. Claim 37

173. In my opinion, Buckley in view of Bates renders this claim obvious.

174. Bates teaches “the current physical address of the user accessing the communications service provider 120 with the user communication device ... may be ***explicitly supplied by the user.***” EX1009, 5:30-34.

8. Claim 38

175. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 38.

9. Claim 39

176. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 39.

10. Claim 40

177. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 40.

178. Bates teaches “the communications service provider [] may *receive a request* to establish a connection from the user communication device” as well as “a service level identifier (e.g., *a screen name*) and password from the user communication device.” EX1009, 8:20-25. Buckley teaches “mapp[ing]” the IMRN (access code) to “*all* [of] the received SIP call information,” such that the selected access code would be associated with the caller identifier (e.g., screen name) included in the access code request message. *See* EX1005, 6:2-3.

11. Claim 43

179. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 43.

12. Claim 45

180. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 45.

13. Claim 46

a. Element 46[preamble]

181. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 46[preamble].

b. Element 46[a]

182. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 46[a]; Ground III, Element 30[a].

c. Element 46[b]

183. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 46[b]; Ground III, Element 30[b]. Additionally, Bates teaches “a processor will receive instructions and data from a read-only memory and/or a random access memory.” EX1009, 21:21-23.

d. Element 46[c]

184. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 46[c].

14. Claim 47

185. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 47.

15. Claim 48

186. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 48.

16. Claim 51

187. In my opinion, Buckley in view of Bates renders this claim obvious. *See*
Ground I, Claim 51.

17. Claim 53

188. In my opinion, Buckley in view of Bates renders this claim obvious. *See*
Ground II, Claim 37.

18. Claim 54

189. In my opinion, Buckley in view of Bates renders this claim obvious. *See*
Ground I, Claim 54.

19. Claim 61

190. In my opinion, Buckley in view of Bates renders this claim obvious. *See*
Ground I, Claim 61.

20. Claim 62

a. Element 62[preamble]

191. In my opinion, Buckley in view of Bates renders this element obvious. *See*
Ground I, Element 62[preamble].

b. Element 62[a]

192. In my opinion, Buckley in view of Bates renders this element obvious. *See*
Ground I, Element 62[a].

c. **Element 62[b]**

193. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 62[b].

d. **Element 62[c]**

194. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 62[c].

e. **Element 62[d]**

195. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 62[d]; Ground III, Element 30[a].

f. **Element 62[e]**

196. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 62[e]; Ground III, Element 30[b].

g. **Element 62[f]**

197. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 62[f].

21. Claim 64

198. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 64.

22. Claim 65

199. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 65.

23. Claim 67

200. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 67.

24. Claim 69

201. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground III, Claim 37.

25. Claim 70

202. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 70.

26. Claim 72

203. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 72.

27. Claim 75

204. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 75.

D. Ground IV: Claims 38-39, 54, and 70 Are Obvious Over Buckley in View of Bates and Further in View of Ejzak.

1. Motivation to Combine

205. A POSITA would have been motivated to combine Buckley with Bates for the reasons described above in Ground III. A POSITA would have been further motivated to combine Buckley with Ejzak for the reasons described above in Ground II. In that ground, Ejzak's DNS/ENUM server provides the

ability for any E.164 number (including those used in, and selected from, the pools in Buckley and Bates) to identify an IP address that can be used to route a call. EX1007, 8:29-36; 8:43-48; 8:67-9:1. Ejzak's also provides the ability to replace an E.164 number from the pool with an IP address used to route the call. *Id.* Ejzak's teachings may therefore be incorporated into the combination of Buckley with Bates in the same way that it can be incorporated into Buckley as described above in Ground II; in other words, Buckley's pool is able to accommodate both techniques, each motivated for the reasons set forth above in Grounds II and III. EX1005, 5:5-6 ("To allow flexibility, it may be desirable to provide for different pools of IMRNs....").

2. Claim 38¹⁸

206. In my opinion, Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* Ground II, Claim 38; Ground III, Claim 38.

3. Claim 39

207. In my opinion, Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* Ground II, Claim 39; Ground III, Claim 39.

¹⁸ The complete text of the claims' corresponding portions is available in the claim listing attached hereto as Appendix A.

4. Claim 54

208. In my opinion, Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* Ground III, Claim 54; Ground IV, Claim 54.

5. Claim 70

209. In my opinion, Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* Ground III, Claim 70; Ground IV, Claim 70.

IX. SECONDARY CONSIDERATIONS

210. I am not aware of any evidence of secondary considerations that would support a finding of non-obviousness. In particular, I am not aware of any commercial success of the alleged invention in the Challenged Claims; skepticism by those having ordinary skill in the art at the time of the alleged invention regarding the possibility, utility, or success of the alleged invention of the Challenged Claims; unexpected results achieved by the alleged invention of the Challenged Claims; any long-felt but unsolved need in the art that was satisfied by the alleged invention of the Challenged Claims; the failure of others to make the alleged inventions of the Challenged Claims; praise of the alleged invention in the Challenged Claims by those having ordinary skill in the art; or copying of the alleged invention in the Challenged Claims by others in the field.

X. CONCLUSION

211. Based on my analysis above, it is my opinion that the challenged claims of the '234 Patent are obvious over Buckley alone and also obvious over Buckley in view of Bates.

212. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. See 18 U.S.C. § 1001.

Date: June 30, 2022



Vijay Madisetti

APPENDIX A

No.	Claim Language
30[preamble]	A method for enabling mobile telephone roaming, the method comprising:
30[a]	receiving from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone
30[b]	producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and wherein said access code expires after a period of time and wherein producing said access code comprises selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
30[c]	transmitting an access code reply message including said access code, to the mobile telephone.
31	The method of claim 30 wherein receiving comprises receiving said access code request message on a non-voice network.
32	The method of claim 30 wherein producing said access code comprises causing a routing controller operably configured to route a call between said caller and said callee to produce said access code.
33	The method of claim 30 further comprising determining from said location identifier a local calling area associated with the mobile telephone and selecting an access code associated with a calling area matching said local calling area associated with the mobile telephone.
35	The method of claim 30 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network.
37	The method of claim 30 wherein said location identifier comprises a user-configured identifier of a location associated with the mobile telephone.

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38	The method of claim 30 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.
39	The method of claim 38 further comprising enabling communications between said caller and said callee to be established through an IP network in response to a call received at said IP network address.
40	The method of claim 30 wherein said access code request message includes a caller identifier and wherein the method further comprises associating said caller identifier included in said access code request message with the selected access code.
43	The method of claim 30 wherein producing further comprises associating a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and causing said timestamp to be included in said access code reply message transmitted to the mobile telephone.
45	The method of claim 30 wherein transmitting comprises transmitting said access code reply message on a non-voice network.
46[preamble]	A system for enabling mobile telephone roaming, the System comprising:
46[a]	means for receiving from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;
46[b]	means for producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel and wherein said access code expires after a period of time and wherein said means for producing said access code comprises means for selecting said access code from a pool of access codes wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
46[c]	means for transmitting an access code reply message including said access code to the mobile telephone.

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47	The system of claim 46 wherein said means for receiving comprises a non-voice network interface for receiving said access code request message on a non-voice network.
48	The system of claim 46 wherein said means for producing said access code comprises a routing controller operably configured to route a call between said caller and said callee.
51	The system of claim 46 wherein said location identifier includes an IP address of the mobile telephone in a wireless IP network.
53	The system of claim 46 wherein said location identifier includes a user-configured identifier of a location associated with the mobile telephone.
54	The system of claim 46 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.
61	The system of claim 46 wherein said means for transmitting comprises a non-voice network interface for transmitting said access code reply message on a non-voice network.
62[preamble]	A system for enabling mobile telephone roaming, the system comprising:
62[a]	a processor circuit;
62[b]	a network interface in communication with said processor circuit; and
62[c]	a computer readable medium in communication with said processor circuit and encoded with codes for directing said processor circuit to
62[d]	receive from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;

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62[e]	communicate with a routing controller to obtain from said routing controller an access code identifying a communication channel, said access code being determined from said location identifier and/or based on a location pre-associated with the mobile telephone and said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and wherein said access code expires after a period of time and wherein said access code is selected from a pool of access codes and wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
62[f]	cause an access code reply message including said access code to be transmitted to the mobile telephone.
64	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to cause a routing controller to produce said access code.
65	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to determine from said location identifier a local calling area associated with the mobile telephone and to select an access code associated with a calling area matching said local calling area associated with the mobile telephone.
67	The system of claim 62 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network.
69	The system of claim 62 wherein said location identifier comprises a user-configured identifier of a location associated with the mobile telephone.
70	The system of claim 62 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.
72	The system of claim 62 wherein said access code request message includes a caller identifier and wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate said caller identifier included in said access code request message with the selected access code.

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75	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and to cause said timestamp to be included in said access code reply message.
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